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**TETRA TECH**

**E.C. HILL "A, B and C" TANK BATTERY  
ANNUAL GROUNDWATER SAMPLING REPORT**

**LOCATED IN  
LEA COUNTY, NEW MEXICO**

*Prepared for:*

**GLENN SPRINGS HOLDINGS  
(A wholly owned subsidiary of Occidental Petroleum)**

*Prepared by:*

**Tetra Tech**  
1910 N. Big Spring St.  
Midland, Texas 79705  
(432) 682-4559  
Fax (432) 682-3946

Tetra Tech Project No. 115-6401746  
AUGUST 10, 2009

complex world

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**TETRA TECH**

August 10, 2009

Mr. Glenn von Gonten  
New Mexico Energy, Minerals, & Natural Resources  
Oil Conservation Division, Environmental Bureau  
1220 S. St. Francis Drive  
Santa Fe, New Mexico 87504

**Re: March 2008 to June 2009 Annual Groundwater Sampling Report for the OXY USA, Inc., E.C. Hill "A, B and C" Tank Battery, Located in Section 27, Township 23 South, Range 37 East, Lea County, New Mexico.**

Mr. Von Gonten:

This report details the results of the quarterly sampling events performed at the OXY USA, Inc. (OXY) E. C. Hill A, B, and C Tank Battery (Site) for March 2008 to June 2009. The site is located approximately 11 miles south of Eunice, Lea County, New Mexico. The facility was acquired by OXY USA, Inc in March 2008. The site location is shown on Figure 1.

### **FACILITY BACKGROUND**

This facility is an old tank battery, which has had numerous spills from previous operators. Prior to OXY USA, Inc. (OXY), the facility was operated by Plains Exploration and Production, Pogo Producing Company, Chevron and Mid-Continent. During Pogo's operation of this facility, several documented spills occurred over older spills at the facility. The majority of the spills occurred around production equipment and active underground lines. Pogo had proposed deferring all major cleanup activities on the inaccessible areas of the tank battery until the tank battery was abandoned.

In November 2003, Pogo decided to shut down all production to the tank battery and removed all tanks, vessels, equipment and lines in order to make the former tank battery location accessible to perform further assessment. Once the facility was dismantled, the impacted soils were excavated in the areas of the tanks, vessels and lines. In February 2004, fifteen test trenches to a depth of 5 feet below ground surface were excavated throughout the former tank battery

Tetra Tech

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location to delineate impacted soils. The trenches were found to be impacted with elevated levels of TPH/BTEX/Chlorides. Based on the results of the trenching, it was decided that soil borings would be required to complete delineation at the site.

Between May and August 2005, thirteen boreholes were installed throughout the former tank battery area. The soil results indicated the site was impacted to groundwater with elevated levels of TPH, BTEX, and chlorides. It was evident from the boreholes and excavations performed at the site that there was very little lateral migration of hydrocarbons in subsurface soils and the impact was defined. In order to prevent leaching of the surrounding soils to the groundwater, a 40-mil thick plastic liner (CAP) was installed in the excavation measuring 100' by 180'. The liner was installed to a depth of 3.5 feet below surface grade with the impacted excavated soils placed beneath the liner to prevent leaching. Once placed in the ground, the liner was backfilled and the excavation brought up to grade with clean soils.

Between September 2004 and July 2006, Pogo installed five monitor wells (MW-1 through MW-5) to assess the groundwater impacts to the site. MW-1 was installed immediately south of the excavation, while MW-2 and MW-3 were installed north of the excavation. Monitor wells MW-4 and MW-5 were installed to the east and southeast of the excavation. Phase separated hydrocarbons were measured in monitor well MW-1, while dissolved phase hydrocarbons in amounts less than the New Mexico Water Quality Control Commission (WQCC) standards were detected in monitor wells MW-3, MW-4, and MW-5. The monitor well locations are shown on Figure 2.

On January 19, 2007, Pogo submitted the "*Soil Vapor Extraction Test Pilot Workplan*," to the NMOCD for approval. The report details plans for installation of a soil vapor extraction system which includes installation of pilot study test wells for recovery of hydrocarbons at the site. As of this report, the approval is pending with the NMOCD.

### **Gauging and Monitor Well Sampling**

On March 23, June 26, September 22, and December 4, 2008, and March 12, and June 22, 2009 Highlander/Tetra Tech, Inc. were onsite to gauge and sample all monitor wells. During these sampling events, Phase Separated Hydrocarbons (PSH) were measured in monitor wells MW-1 and MW-3, which were subsequently not sampled. PSH first appeared in MW-3 in March 2008. The PSH thickness in MW-1 ranged from 2.42 feet to 3.24 feet throughout the sampling period, while the thickness in MW-3 ranged from 2.51 feet to 3.09 feet. PSH thickness maps for the quarterly gauging events are included as Figures 9 through 14. Utilizing the water level elevation calculations, groundwater gradient maps were generated for the quarterly sampling events. The hydraulic gradient



indicates a southeasterly direction. Groundwater gradient maps for the sampling events are included as Figures 3 through 8. Gauging data is summarized in Table 1.

During the quarterly sampling events, each of the wells without PSH was purged utilizing a submersible pump and sampled for BTEX and chlorides. The samples were properly preserved and submitted under proper chain-of-custody control to Trace Analysis Inc. of Lubbock, Texas, ALS Laboratory Group, or Accutest of Houston, Texas for analysis of BTEX by EPA Method SW8021B and chlorides by EPA Method 300.0. Analytical results indicate that BTEX was detected at or below detection limits for all monitor wells with the exception of MW-5 which had a concentration of 0.0018 mg/L of benzene on March 28, 2008. The BTEX concentrations were below the New Mexico Water Quality Control Commission (NMWQCC) standards. Chlorides for the sampling period ranged from 78.0 mg/L in monitor well MW-2 to 1,080 mg/L in monitor well MW-4 and remained relatively stable as compared to previous years sampling events. Chlorides have historically ranged from 31.7 mg/L to 606 mg/L at this site. The March 2008 sample results for monitor well MW-4 was 510 mg/L, which peaked to 1,080 mg/L in June and declined to 717 mg/L in June 2009. The analyses are shown in Table 2. The hydrocarbon concentration maps for the quarterly sampling events are shown as Figures 15 through 20, while chloride concentration maps are shown as Figures 21 through 26. Copies of the laboratory analyses are enclosed in Appendix A.

### **Fingerprint Analysis**

From the installation in June 2005 until December 2007, no measureable PSH had ever been reported in monitor well MW-3. However, in March 2008, PSH was reported in MW-3 with a measured thickness of 2.51 feet. On April 1, 2008, a sample of the PSH was collected and submitted for a fingerprint analysis to Trace Analysis of Lubbock, Texas. The results indicate the sample is fresh crude. No significant aging was evident as shown by the significant number and concentration of light end peaks from C6 to C20. The finger print analysis results are enclosed in Appendix A.

### **CONCLUSIONS**

1. Phase separated hydrocarbons (PSH) were measured throughout the reporting period in monitor wells MW-1 and MW-3. The PSH thickness in MW-1 ranged from 2.42 feet to 3.24 feet throughout the sampling period, while the thickness in MW-3 ranged from 2.51 feet to 3.09 feet.
2. PSH was measured for the first time in monitor well MW-3 in March of



2008. A fingerprint analysis of the PSH indicated it was fresh crude, with no significant aging event, as shown by the significant number and concentration of light end peaks from C6 to C20.

3. The hydraulic gradient indicates a southeasterly direction, which is consistent with previous year's gradients.
4. The monitor wells were gauged and sampled on March 28, June 26, September 22, 2006, and December 4, 2008, and March 12, and June 22, 2009. The samples were preserved and delivered to Trace Analysis, Inc. of Lubbock, Texas, ALS Laboratory Group and Accutest of Houston, Texas under proper chain-of-custody control. The samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) by method SW8021B and chlorides by method 300.0, within their specified holding times.
5. Analytical results indicate that BTEX was detected at or below detection limits for all monitor wells with the exception of MW-5 which had a concentration of 0.0018 mg/L of benzene on March 28, 2008. The BTEX concentrations were below the NMWQCC standards.
6. Chlorides for the sampling period ranged from 78.0 mg/L in monitor well MW-2 to 1,080 mg/L in monitor well MW-4 and remained relatively stable as compared to previous years sampling events. Chlorides have historically ranged from 31.7 mg/L to 606 mg/L. The March 2008 sample results for monitor well MW-4 was 510 mg/L, which peaked to 1,080 mg/L in June and declined to 717 mg/L in June 2009.
7. A remedial action plan dated January 19, 2007 is pending with the NMOCD for installation of a groundwater remediation system.

### **RECOMMENDATIONS**

1. Quarterly groundwater monitoring and gauging will be continued throughout the year.
2. PSH Recovery will be initiated in monitor wells MW-1 and MW-3.
3. Additional investigation of the recent product in monitor well MW-3 and request suspension of SVE proposal review pending results of further investigation.



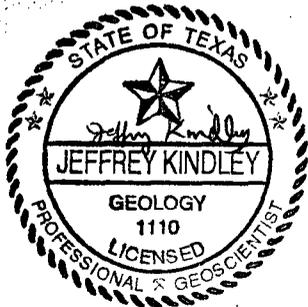
**TETRA TECH**

If you have any question or comments concerning the assessment or the activities performed at the Site, please call me at (432) 682-4559.

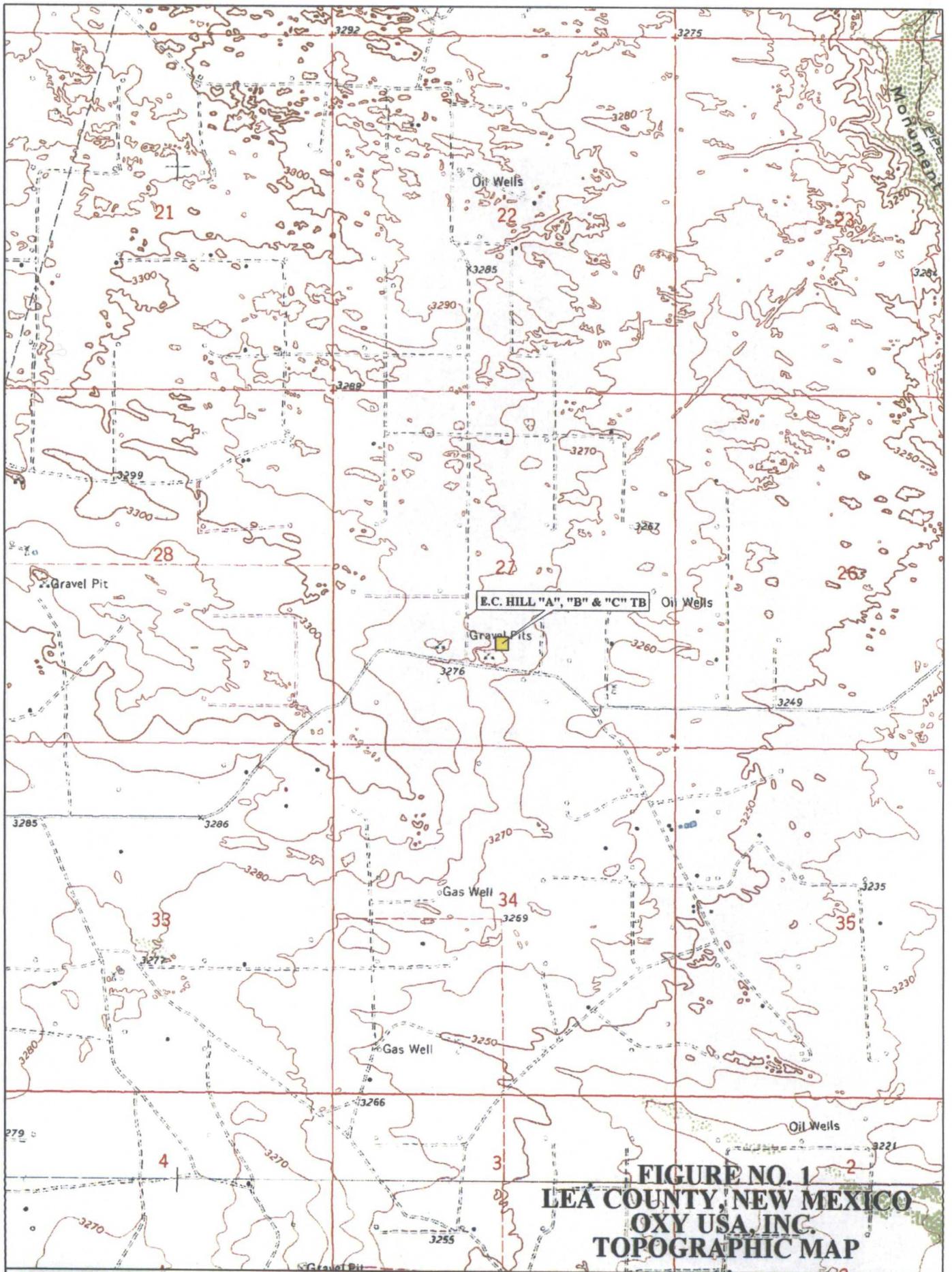
Respectfully submitted,  
Tetra Tech, Inc.

*Jeffrey Kindley*  
Jeffrey Kindley, P.G.  
Senior Environmental Geologist

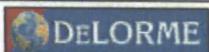
cc: Rick Passmore –Glenn Spring Holdings



## FIGURES



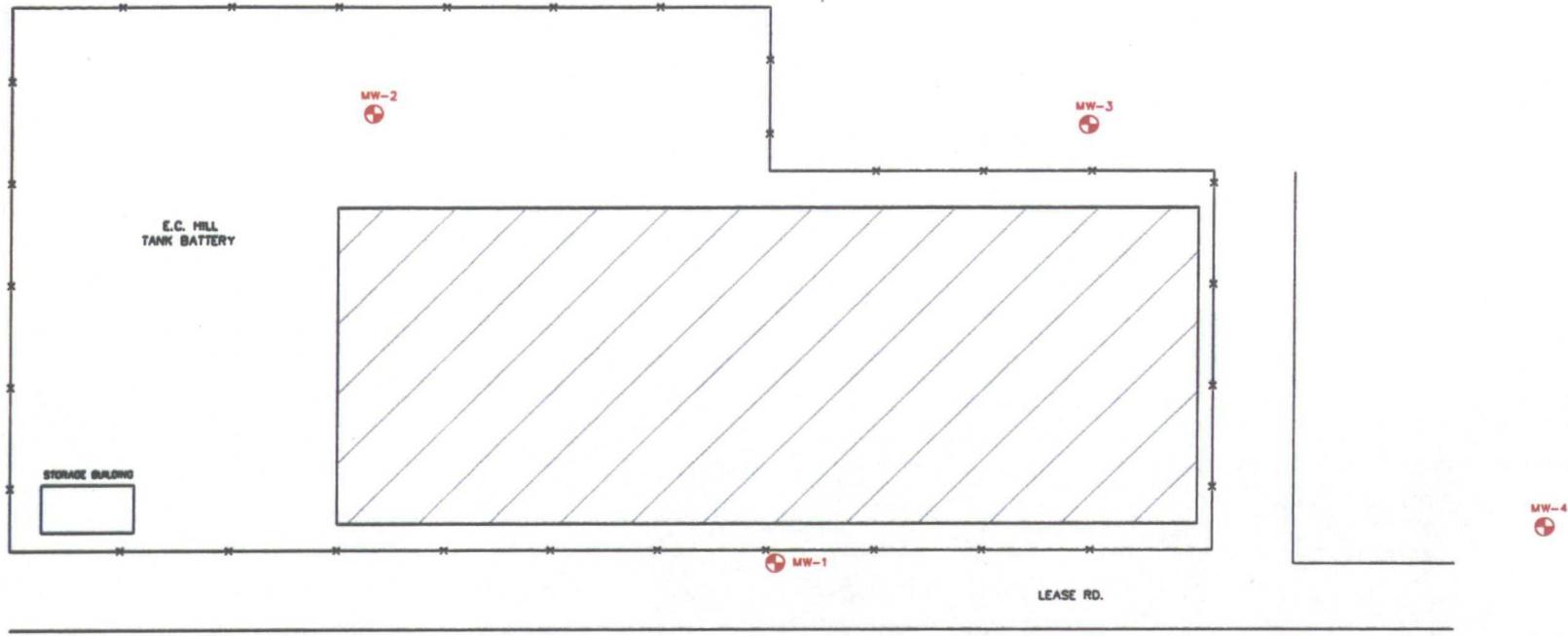
**FIGURE NO. 1  
LEA COUNTY, NEW MEXICO  
OXY USA, INC.  
TOPOGRAPHIC MAP**



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www.delorme.com

Scale 1 : 24,000  
1" = 2000 ft



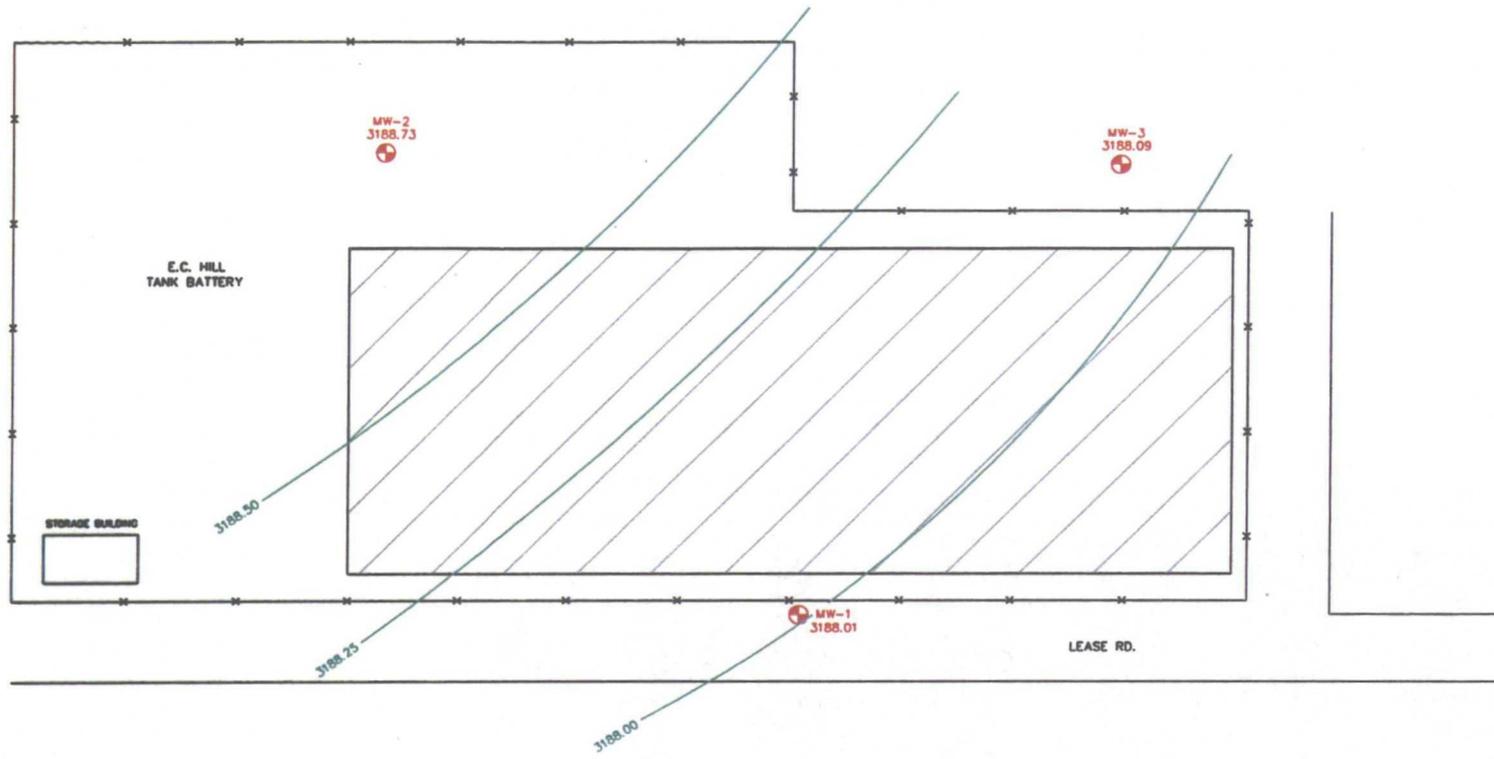


 MONITOR WELL LOCATIONS  
 EXCAVATED AREA

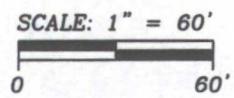
**SCALE: 1" = 60'**  


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 HLL\_A-B SITE MAP

<b>FIGURE NO. 2</b>
LEA COUNTY, NEW MEXICO
OXY USA, INC.
E.C. HILL "A" "B" & "C" TB SITE MAP
TETRA TECH, INC. MIDLAND, TEXAS

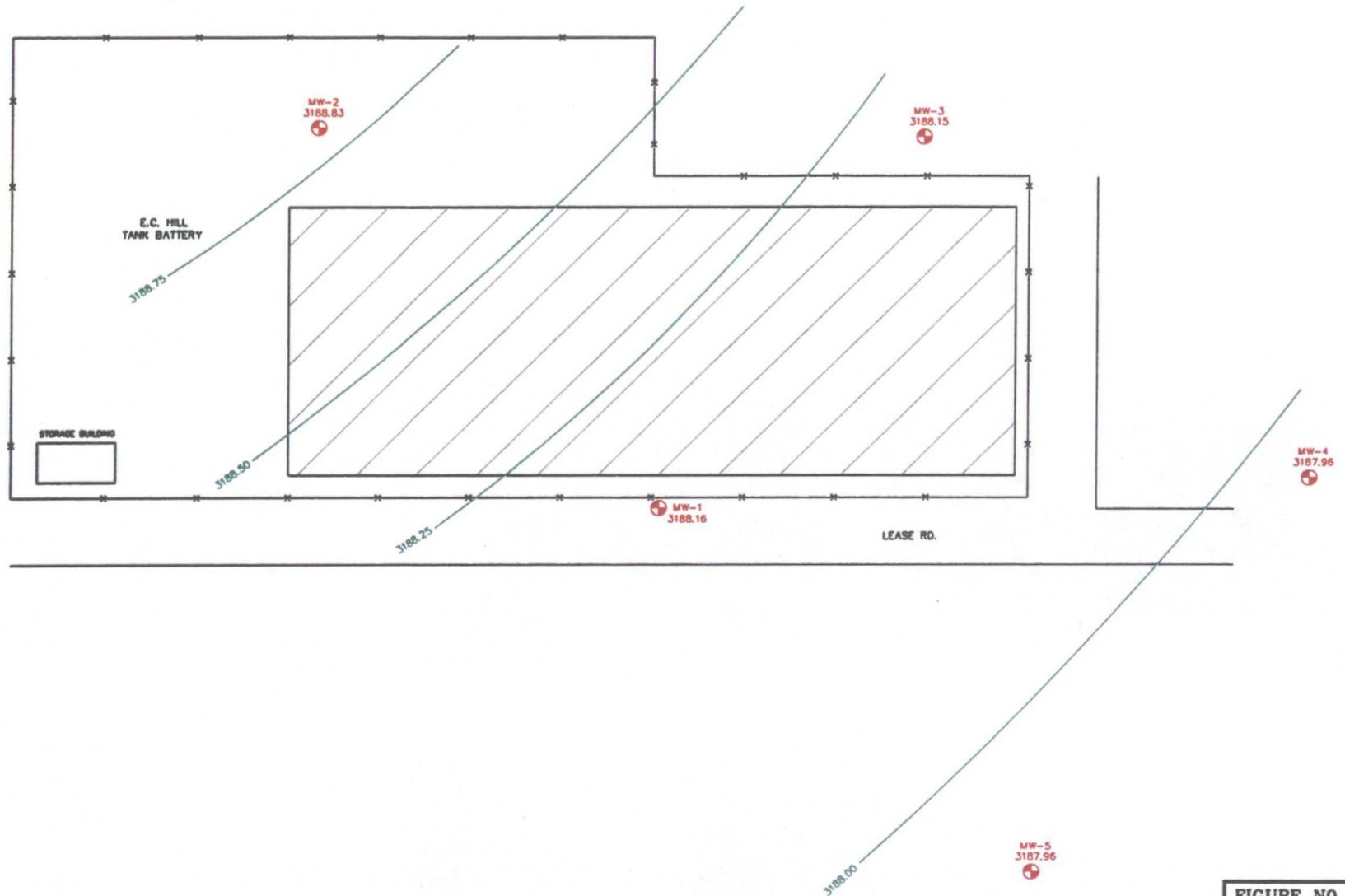


⊕ MONITOR WELL LOCATIONS  
▨ EXCAVATED AREA  
CONTOUR INTERVAL = 0.25'

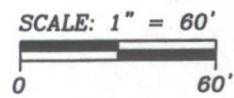


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HILL\_A-B SITE MAP

<b>FIGURE NO. 3</b>
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
GROUNDWATER GRADIENT MAP GAUGED ON 3/28/08
<i>TETRA TECH, INC.</i> MIDLAND, TEXAS

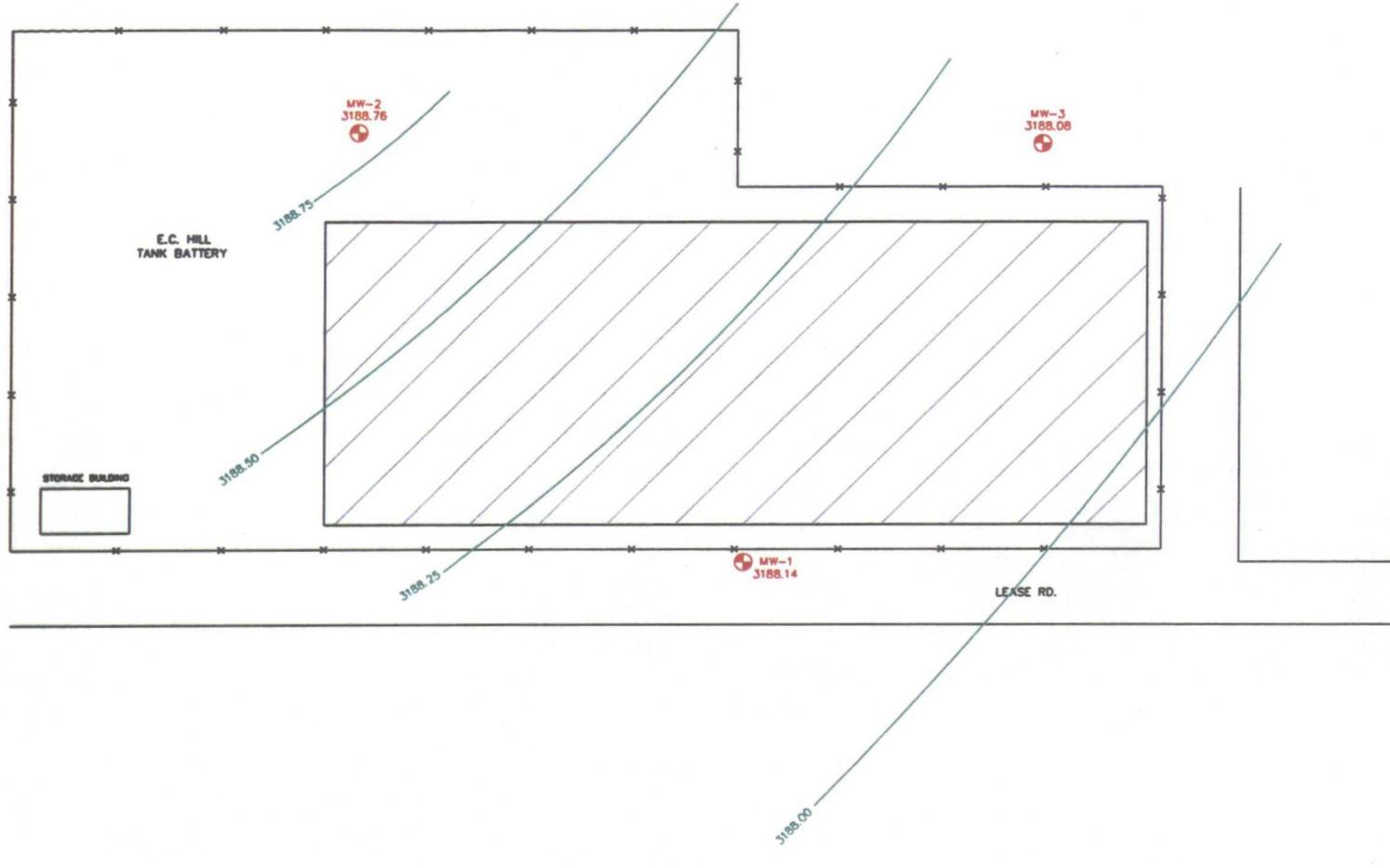


MONITOR WELL LOCATIONS  
EXCAVATED AREA  
CONTOUR INTERVAL = 0.25'

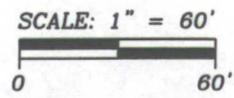


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HILL\_A--B SITE MAP

FIGURE NO. 4
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
GROUNDWATER GRADIENT MAP GAUGED ON 6/26/08
TETRA TECH, INC. MIDLAND, TEXAS

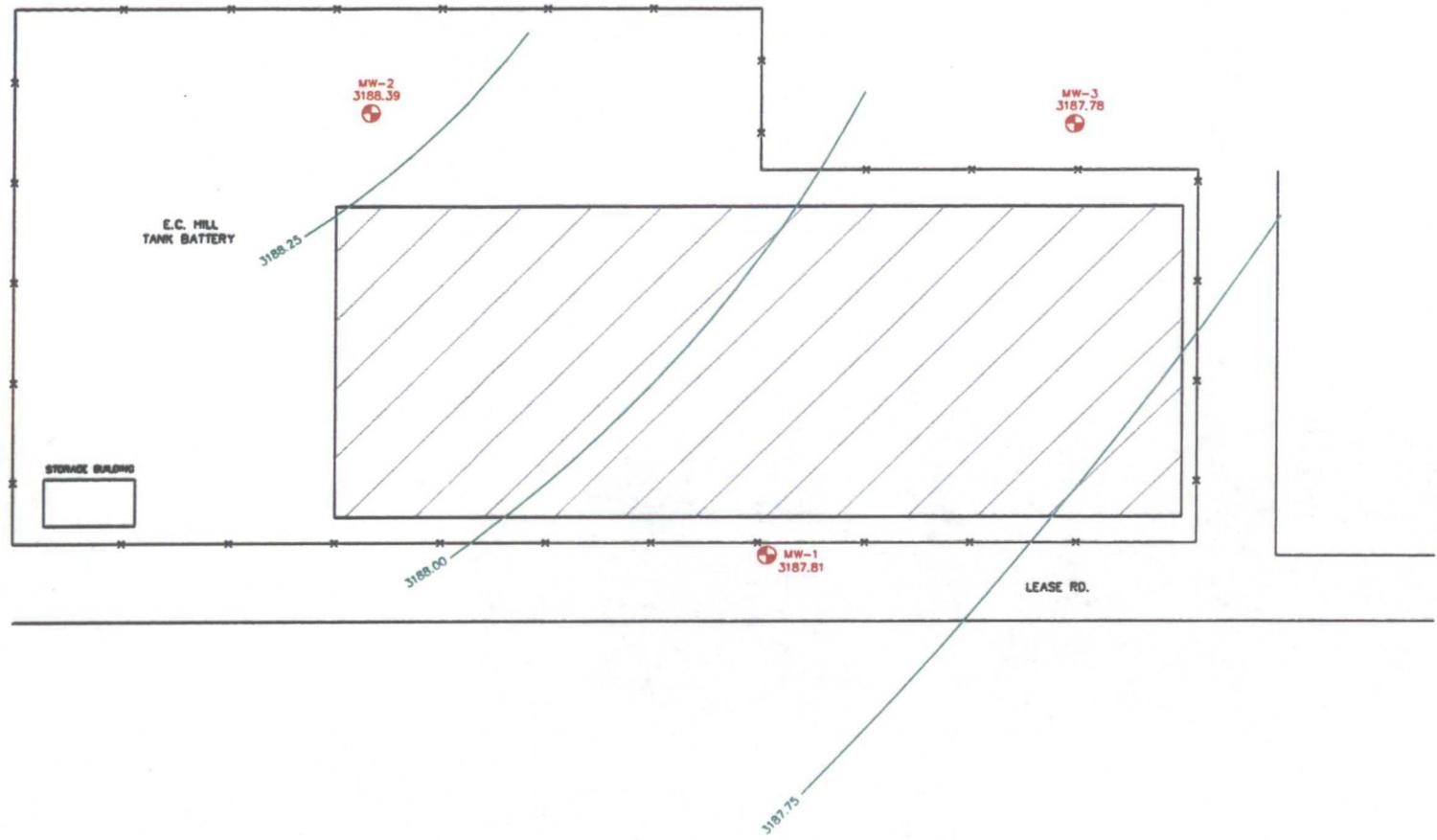


⊕ MONITOR WELL LOCATIONS  
▨ EXCAVATED AREA  
CONTOUR INTERVAL = 0.25'

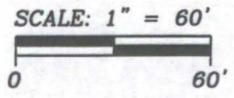


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HILL\_A-B SITE MAP

<b>FIGURE NO. 5</b>	
LEA COUNTY, NEW MEXICO	
OXY USA, INC. E.C. HILL "A" "B" & "C" TB	
GROUNDWATER GRADIENT MAP GAUGED ON 9/22/08	
TETRA TECH, INC. MIDLAND, TEXAS	

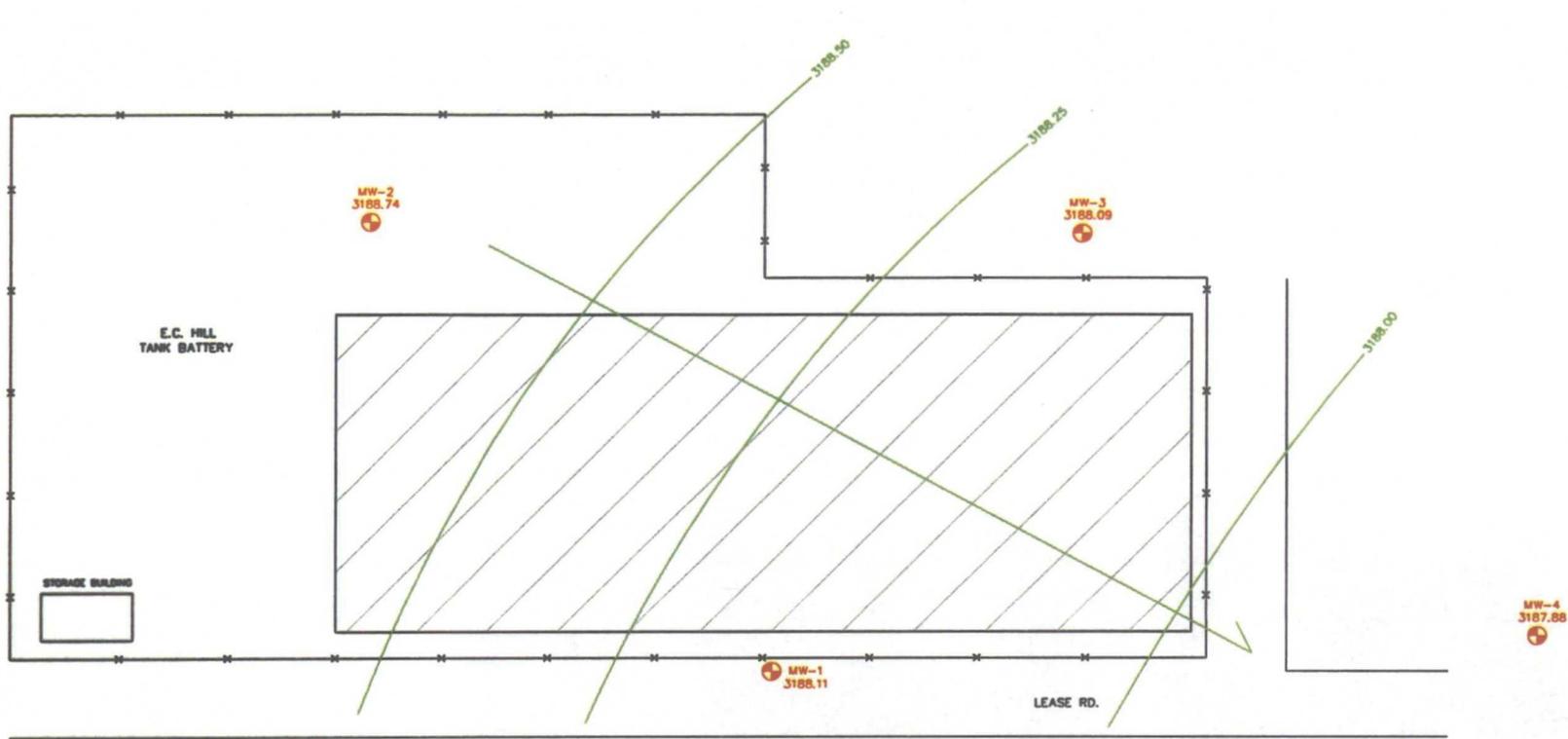


⊕ MONITOR WELL LOCATIONS  
▨ EXCAVATED AREA  
CONTOUR INTERVAL = 0.25'

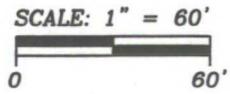


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HILL\_A-B SITE MAP

FIGURE NO. 6
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
GROUNDWATER GRADIENT MAP GAUGED ON 12/4/08
TETRA TECH, INC. MIDLAND, TEXAS

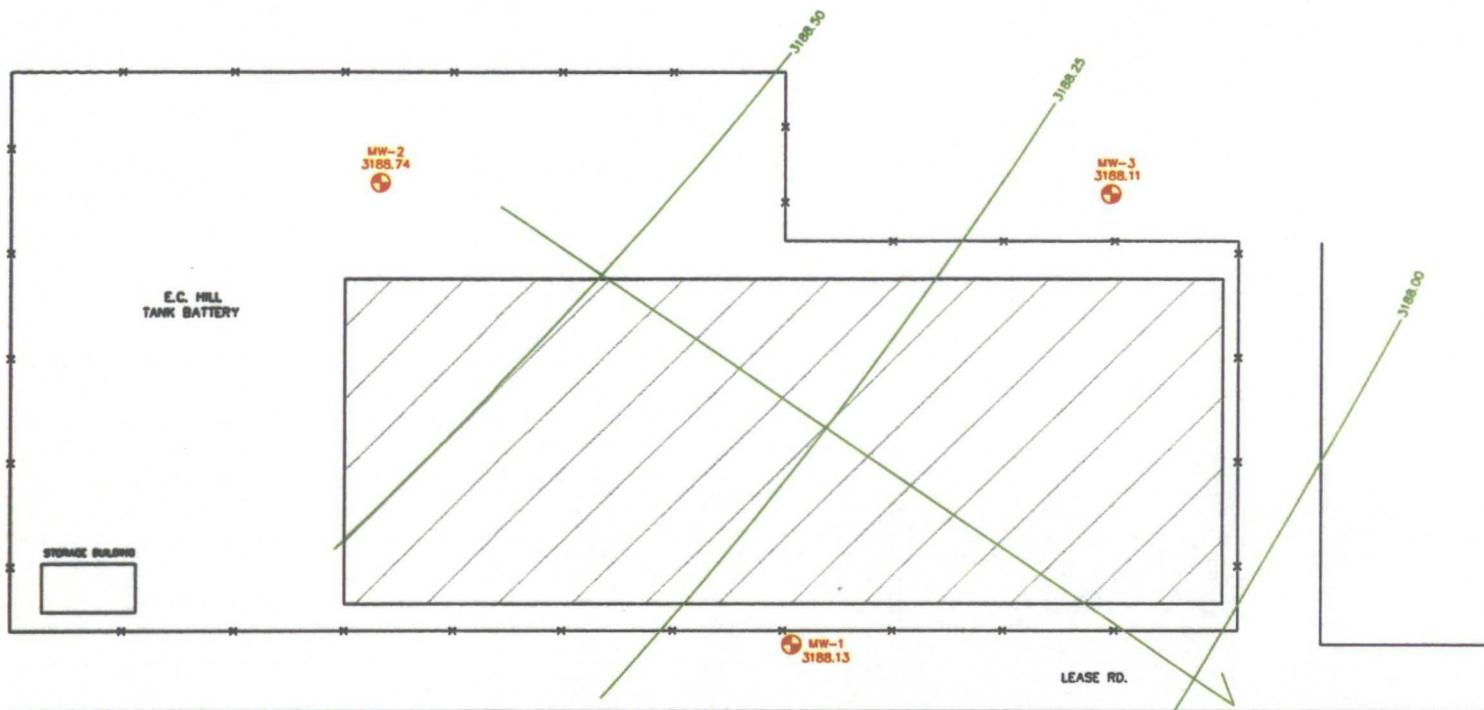


MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
 CONTOUR INTERVAL = 0.25'

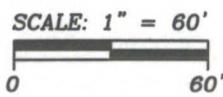


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HLL\_A-S SITE MAP

<b>FIGURE NO. 7</b>	
LEA COUNTY, NEW MEXICO	
OXY USA, INC. E.C. HILL "A" "B" & "C" TB	
GROUNDWATER GRADIENT MAP GAUGED ON 3/12/09	
TETRA TECH, INC. MIDLAND, TEXAS	

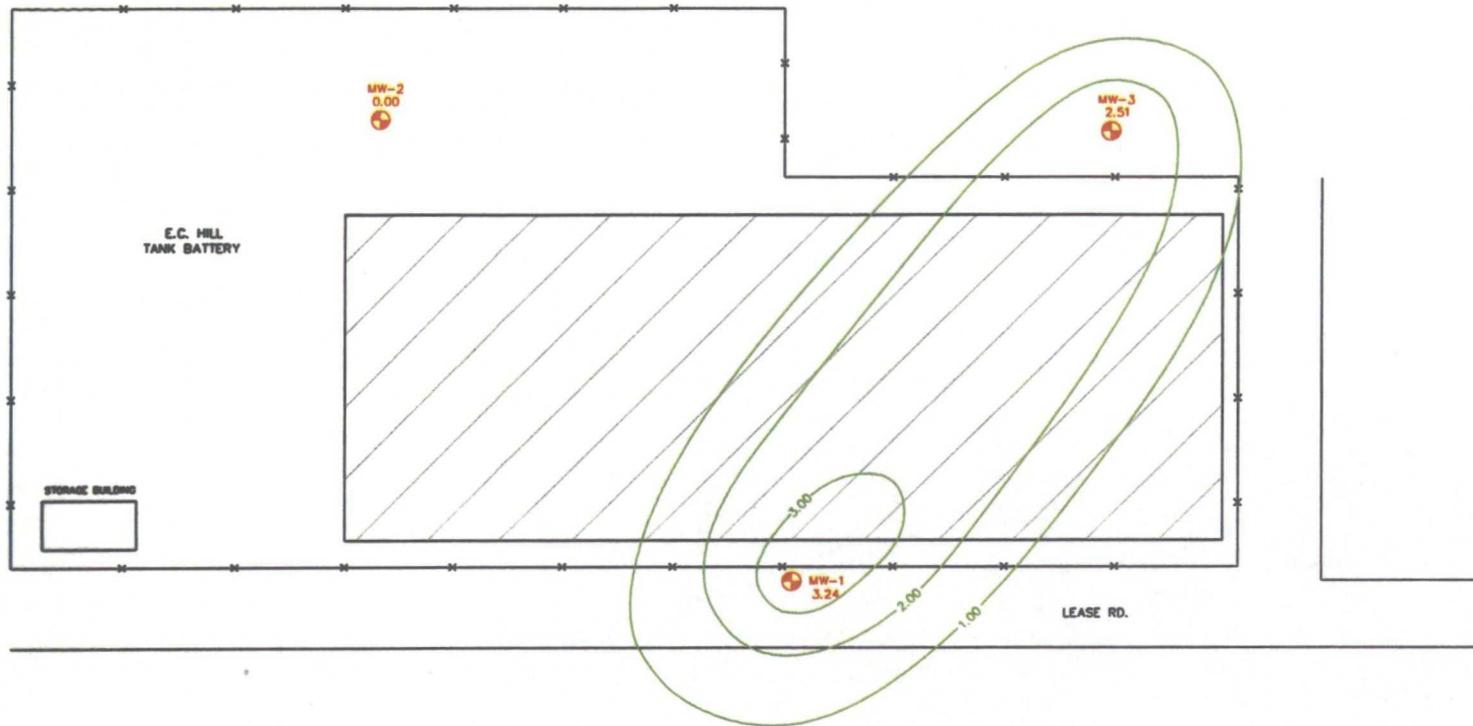


 MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
 CONTOUR INTERVAL = 0.25'



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HILL\_A-B SITE MAP

<b>FIGURE NO. 8</b>
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
GROUNDWATER GRADIENT MAP GAUGED ON 6/22/09
TETRA TECH, INC. MIDLAND, TEXAS

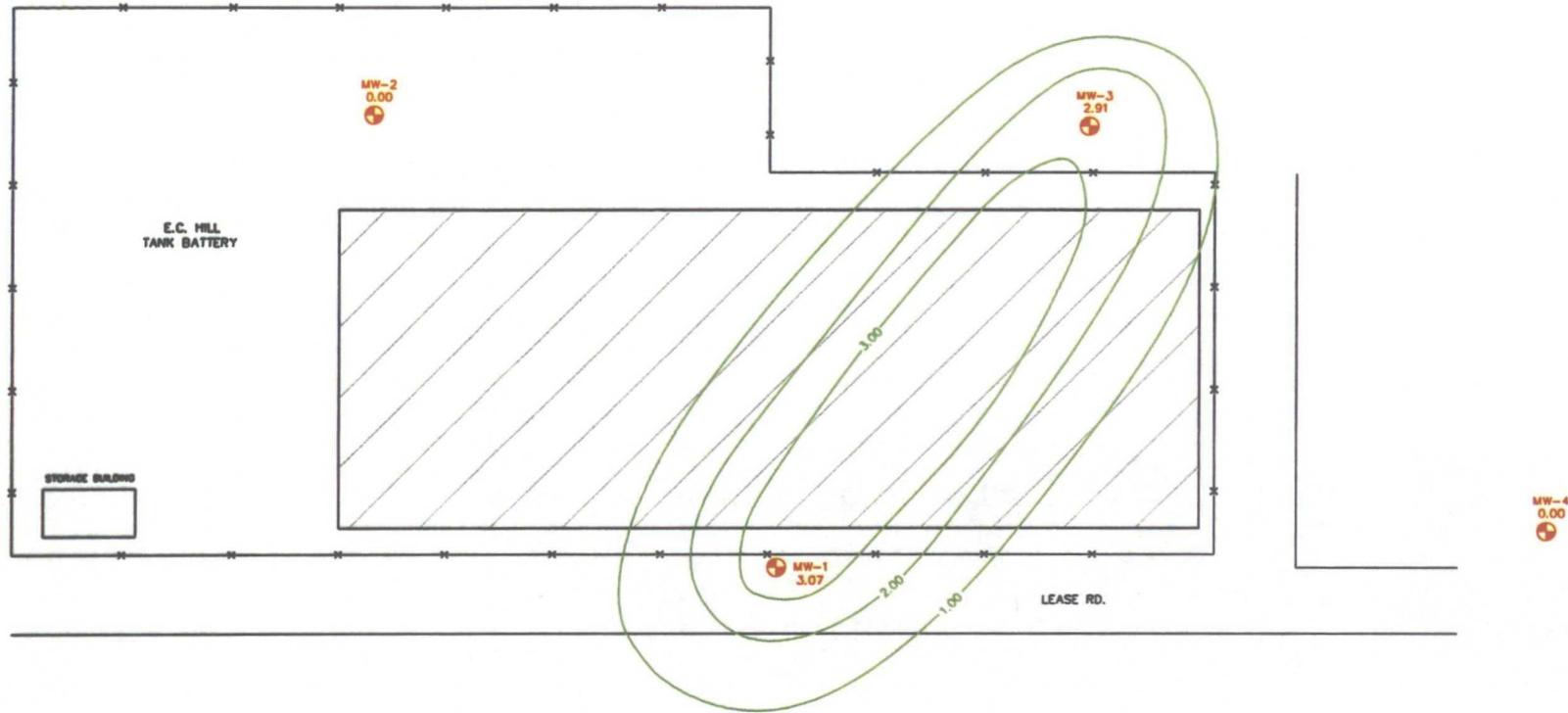


MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
 PSH THICKNESS IN FEET

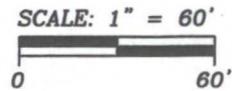
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 HILL\_A-9 SITE MAP

<b>FIGURE NO. 9</b>
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
PSH THICKNESS MAP GAUGED ON 3/28/08
TETRA TECH, INC. MIDLAND, TEXAS



MONITOR WELL LOCATIONS  
 ENCAVATED AREA  
 PSH THICKNESS IN FEET



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 HILL\_A-B SITE MAP

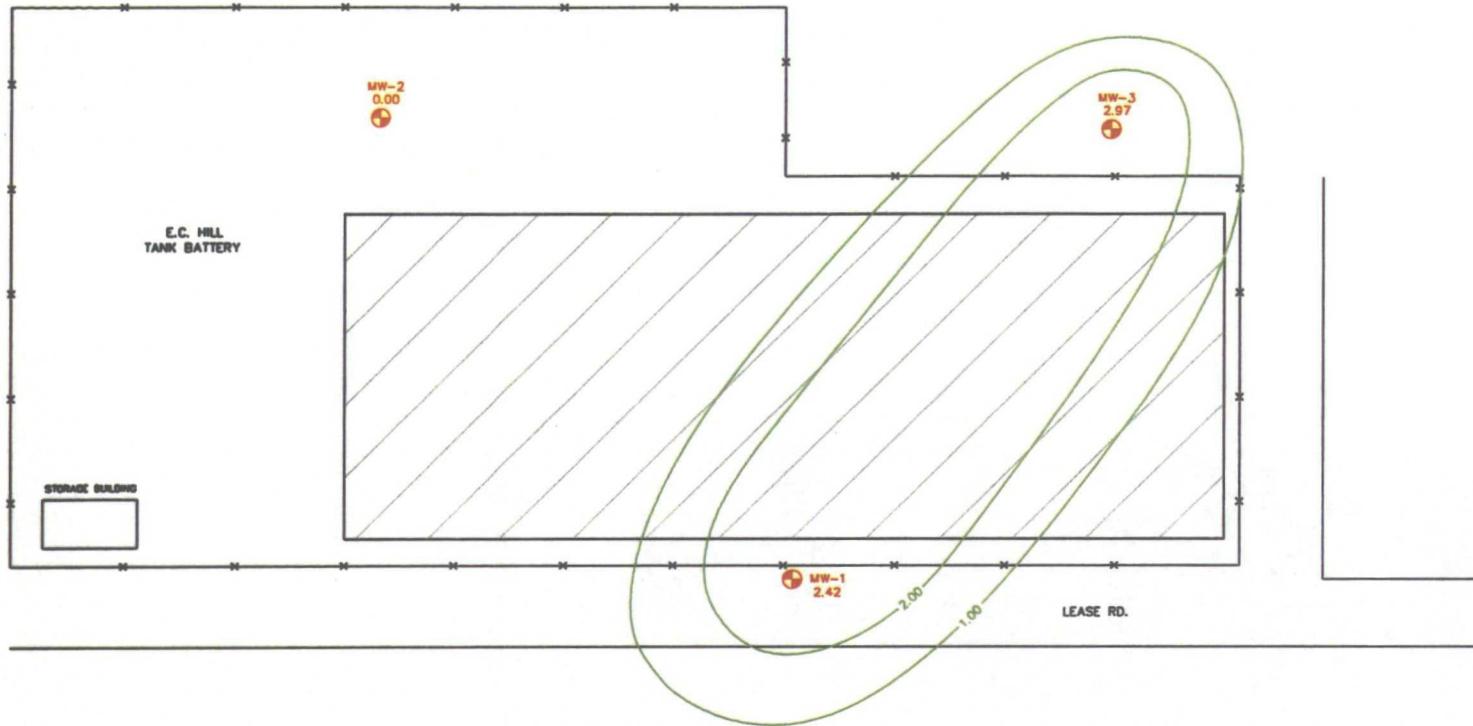
FIGURE NO. 10

LEA COUNTY, NEW MEXICO

OXY USA, INC.  
 E.C. HILL "A" "B" & "C" TB

PSH THICKNESS MAP  
 GAUGED ON 6/26/08

TETRA TECH, INC.  
 MIDLAND, TEXAS

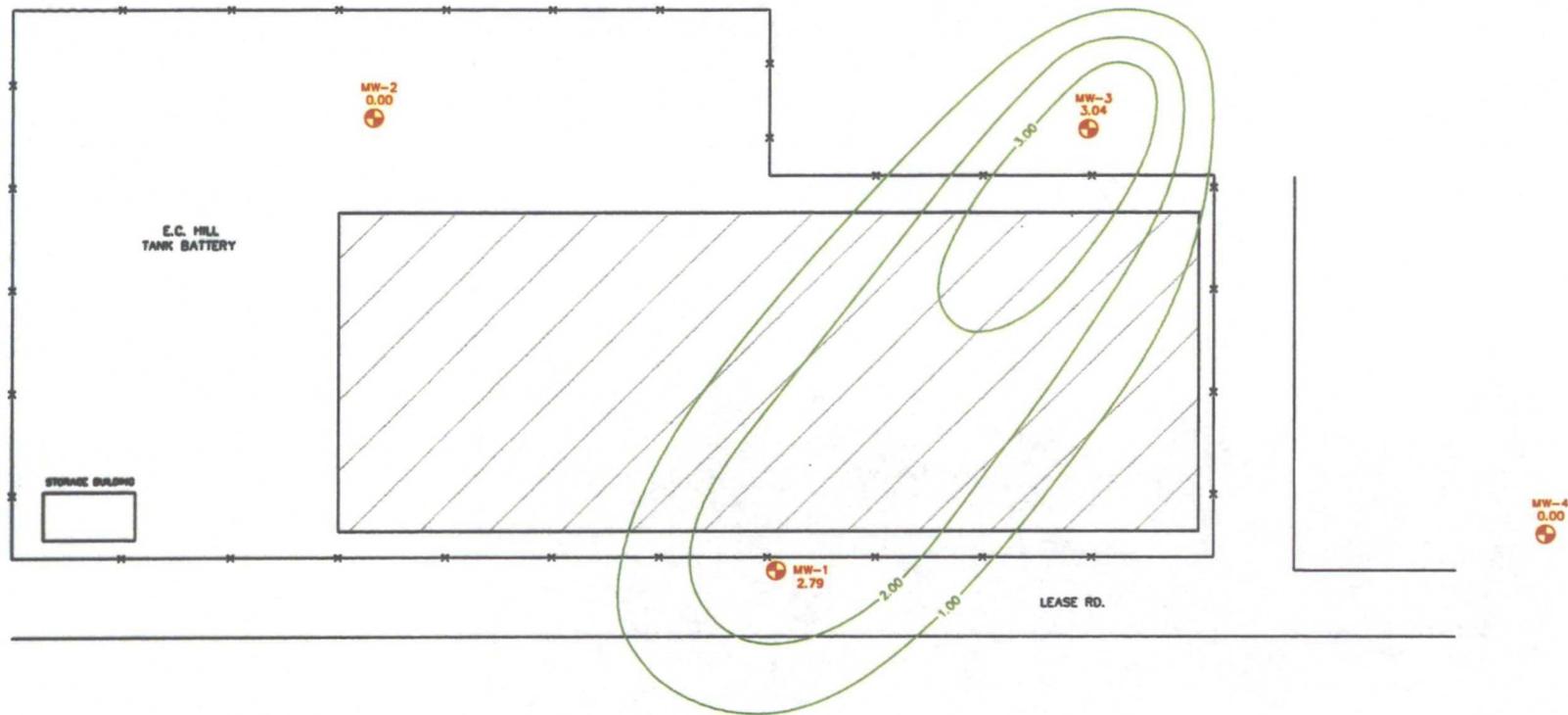


MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
 PSH THICKNESS IN FEET

SCALE: 1" = 60'

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 HILL\_A-B SITE MAP

<b>FIGURE NO. 11</b>
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
PSH THICKNESS MAP GAUGED ON 9/22/08
TETRA TECH, INC. MIDLAND, TEXAS



MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
 PSH THICKNESS IN FEET

SCALE: 1" = 60'

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 HILL\_A-B SITE MAP

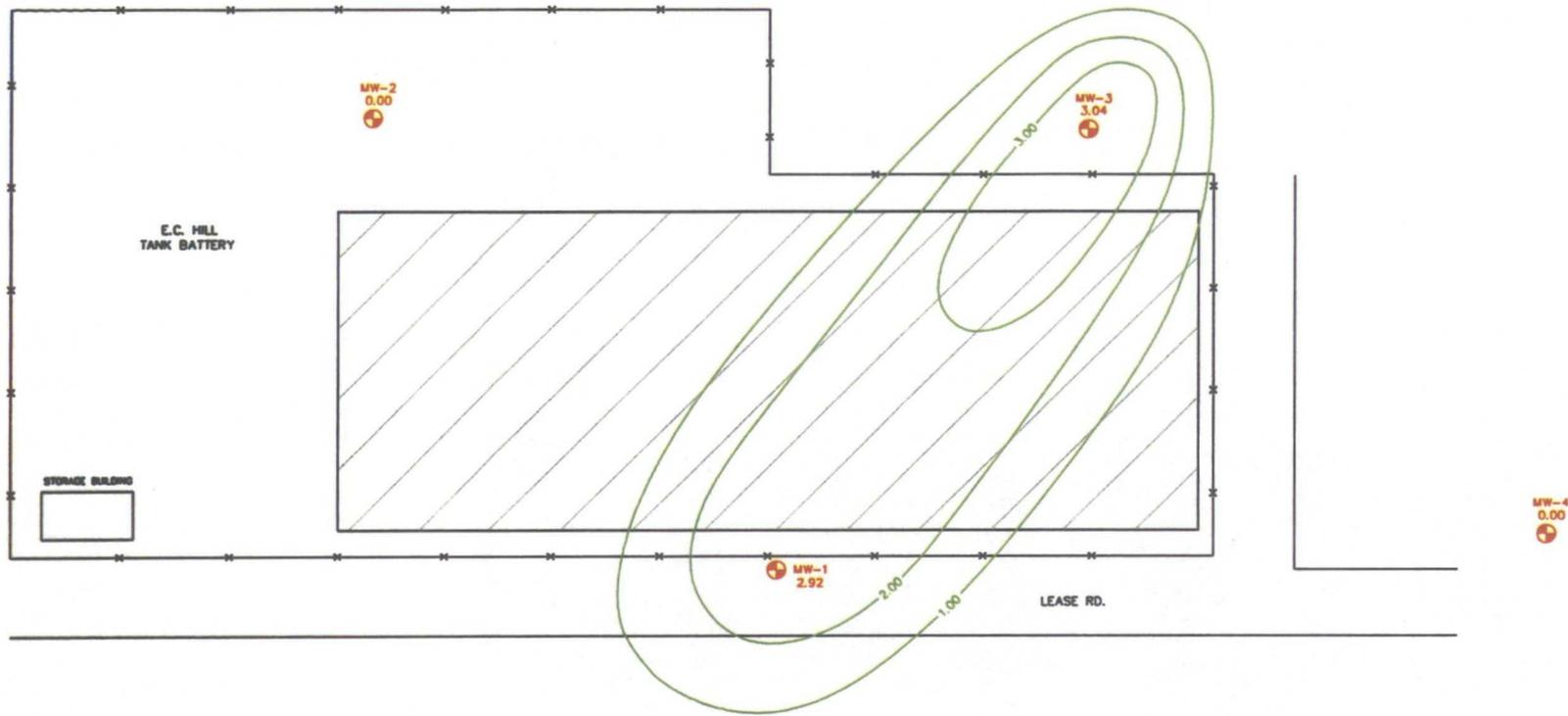
FIGURE NO. 12

LEA COUNTY, NEW MEXICO

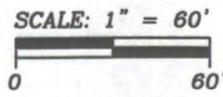
OXY USA, INC.  
 E.C. HILL "A" "B" & "C" TB

PSH THICKNESS MAP  
 GAUGED ON 12/4/08

TETRA TECH, INC.  
 MIDLAND, TEXAS

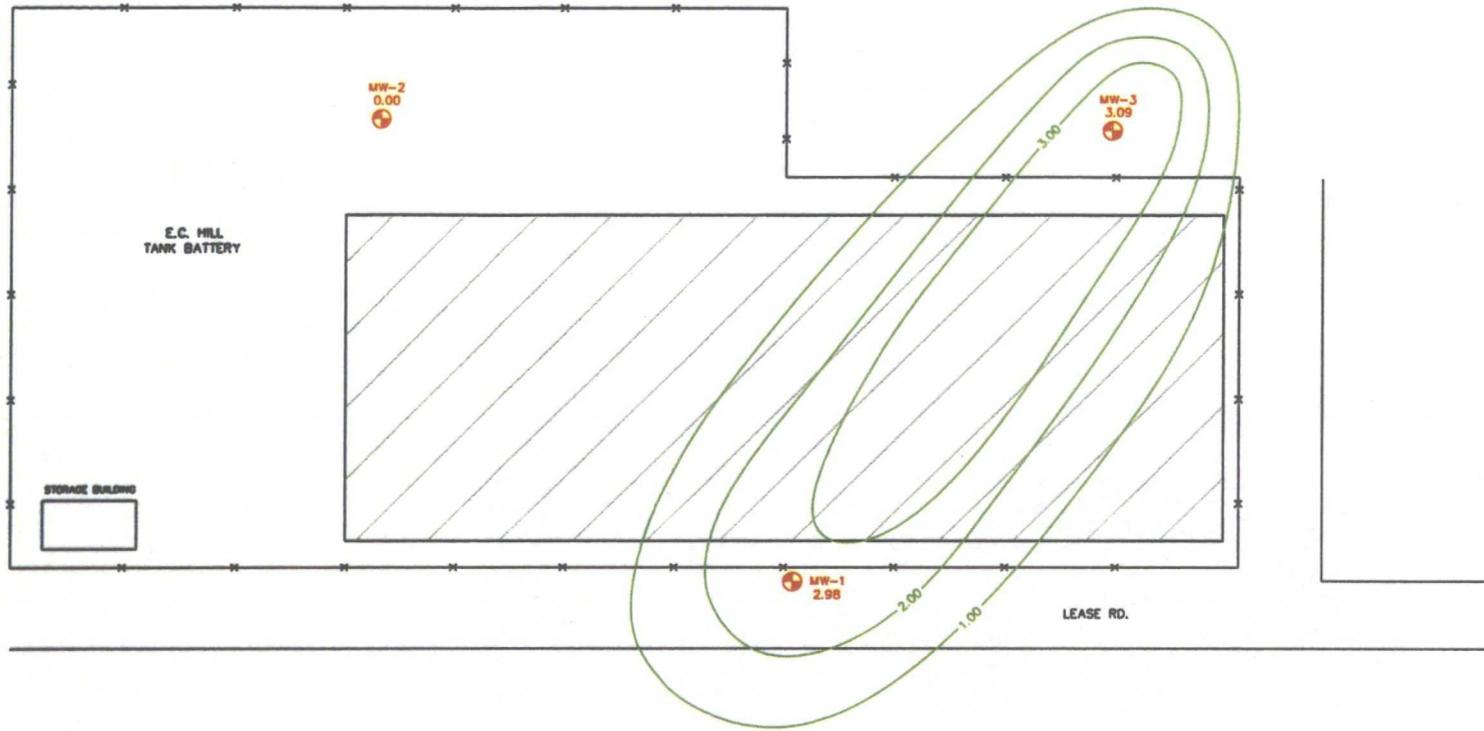


-  MONITOR WELL LOCATIONS
-  EXCAVATED AREA
- PSH THICKNESS IN FEET



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HILL\_A-B SITE MAP

<b>FIGURE NO. 13</b>
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
PSH THICKNESS MAP GAUGED ON 3/12/09
TETRA TECH, INC. MIDLAND, TEXAS

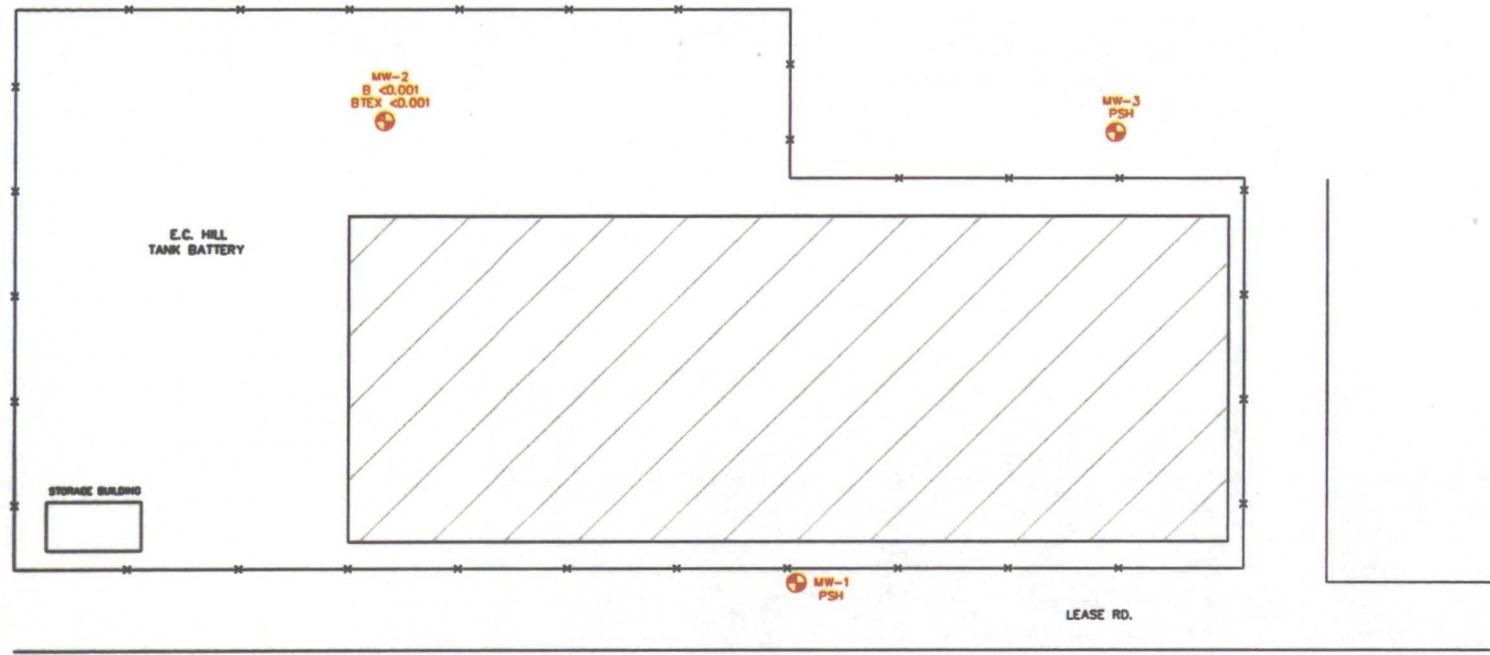


 MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
PSH THICKNESS IN FEET

SCALE: 1" = 60'  
  
0 60'

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HILL\_A-B SITE MAP

FIGURE NO. 14	
LEA COUNTY, NEW MEXICO	
OXY USA, INC. E.C. HILL "A" "B" & "C" TB	
PSH THICKNESS MAP GAUGED ON 6/22/09	
TETRA TECH, INC. MIDLAND, TEXAS	



MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
PSH = PHASE SEPARATED HYDROCARBON  
BTEX CONCENTRATIONS IN mg/L

SCALE: 1" = 60'

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HILL\_A-B SITE MAP

<b>FIGURE NO. 15</b>	
LEA COUNTY, NEW MEXICO	
OXY USA, INC. E.C. HILL "A" "B" & "C" TB	
HYDROCARBON CONCENTRATION MAP SAMPLED ON 3/28/08	
TETRA TECH, INC. MIDLAND, TEXAS	



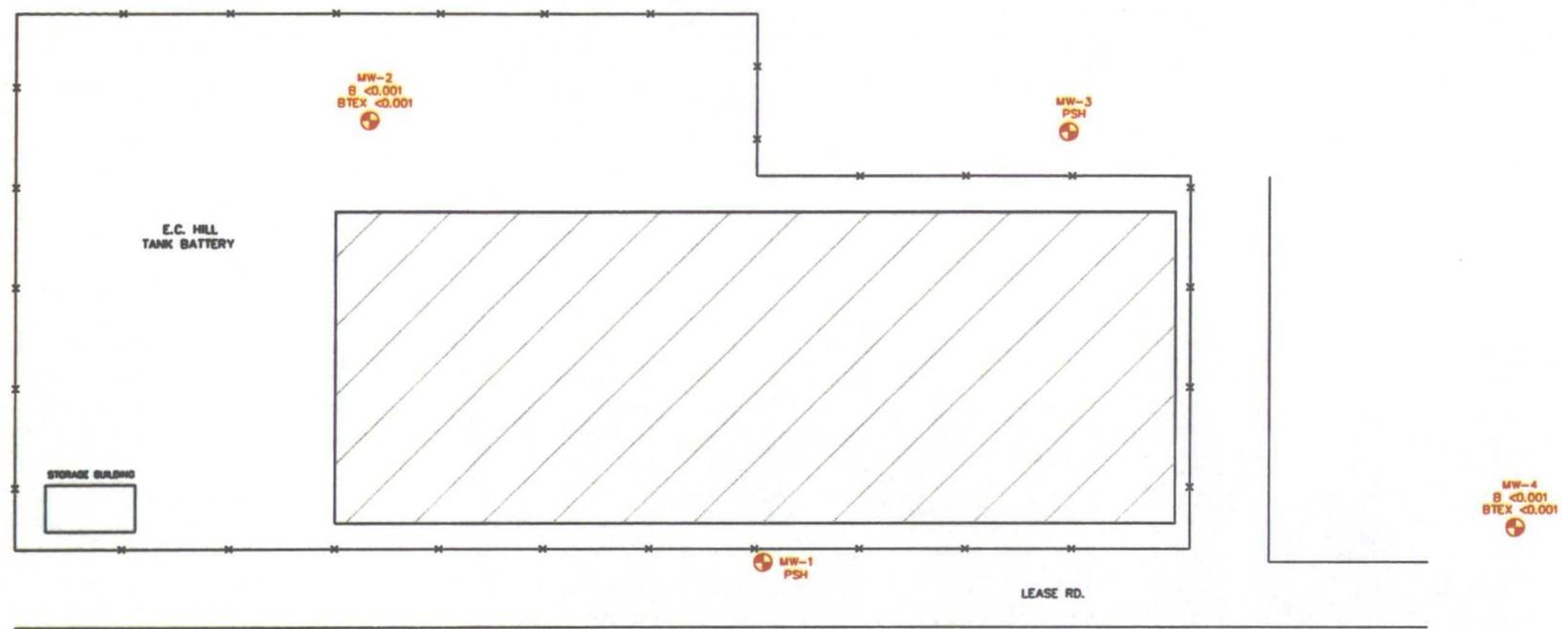
MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
PSH = PHASE SEPARATED HYDROCARBON  
BTEX CONCENTRATIONS IN mg/L

SCALE: 1" = 60'

MW-5  
B <0.001  
BTEX <0.001

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HLL\_A-B SITE MAP

FIGURE NO. 16
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
HYDROCARBON CONCENTRATION MAP SAMPLED ON 6/26/08
TETRA TECH, INC. MIDLAND, TEXAS

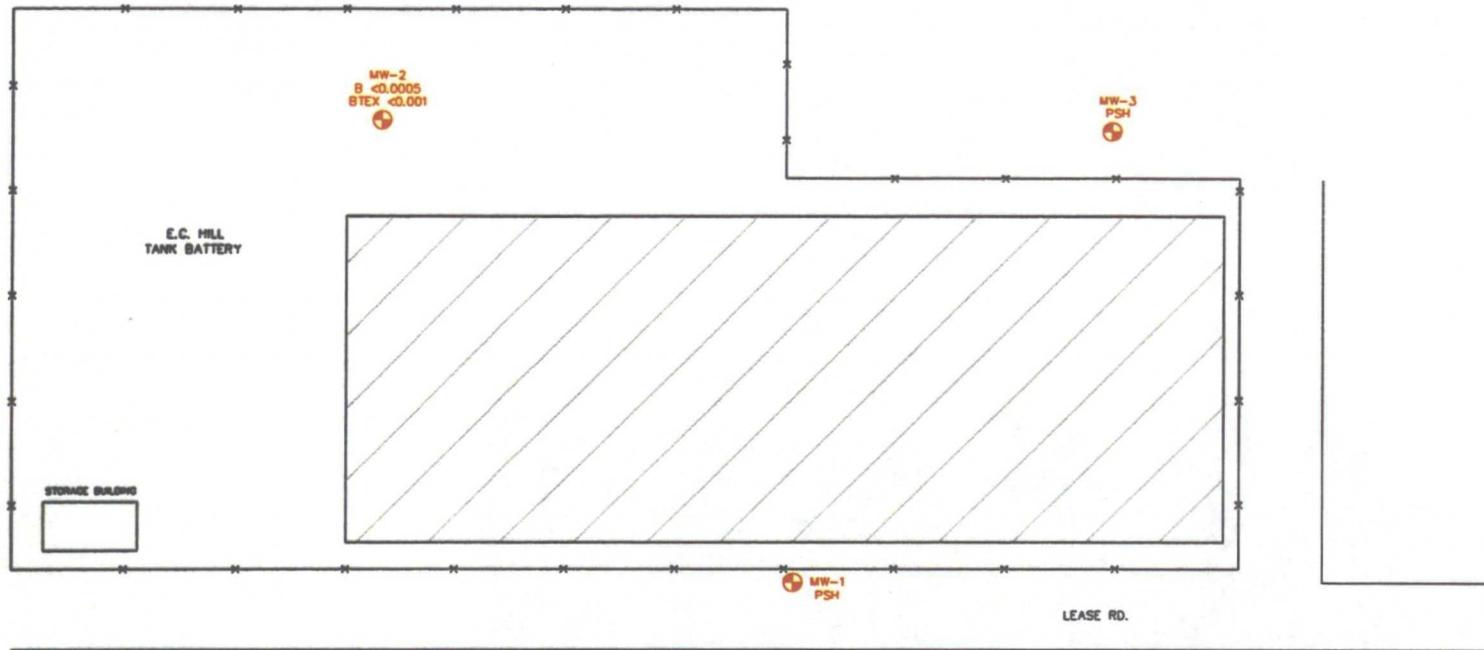


 MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
PSH = PHASE SEPARATED HYDROCARBON  
BTEX CONCENTRATIONS IN mg/L

SCALE: 1" = 60'  


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HILL\_A-B SITE MAP

<b>FIGURE NO. 17</b>
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
HYDROCARBON CONCENTRATION MAP SAMPLED ON 9/22/08
TETRA TECH, INC. MIDLAND, TEXAS



 MONITOR WELL LOCATIONS  
 ENCAVATED AREA  
PSH = PHASE SEPARATED HYDROCARBON  
BTEX CONCENTRATIONS IN mg/L

SCALE: 1" = 60'  


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HILL\_A-B SITE MAP

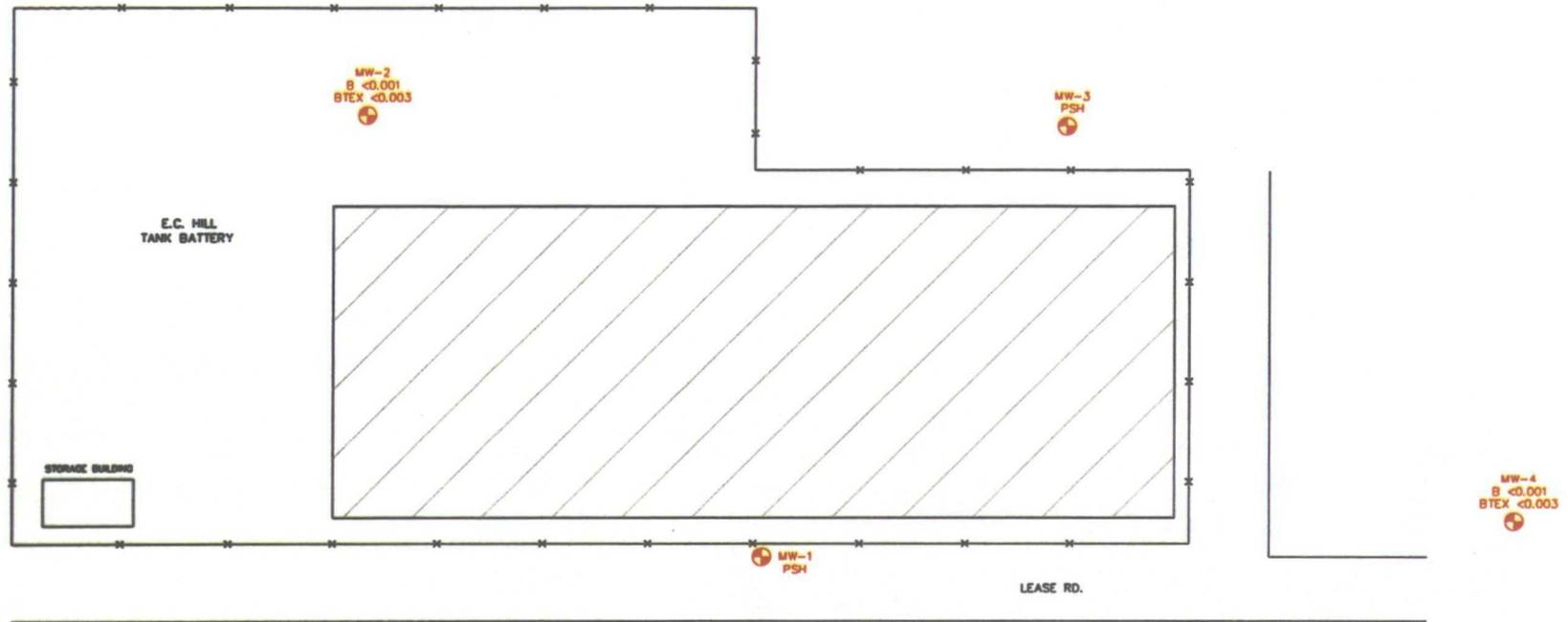
FIGURE NO. 18

LEA COUNTY, NEW MEXICO

OXY USA, INC.  
E.C. HILL "A" "B" & "C" TB

HYDROCARBON CONCENTRATION MAP  
SAMPLED ON 12/4/08

TETRA TECH, INC.  
MIDLAND, TEXAS



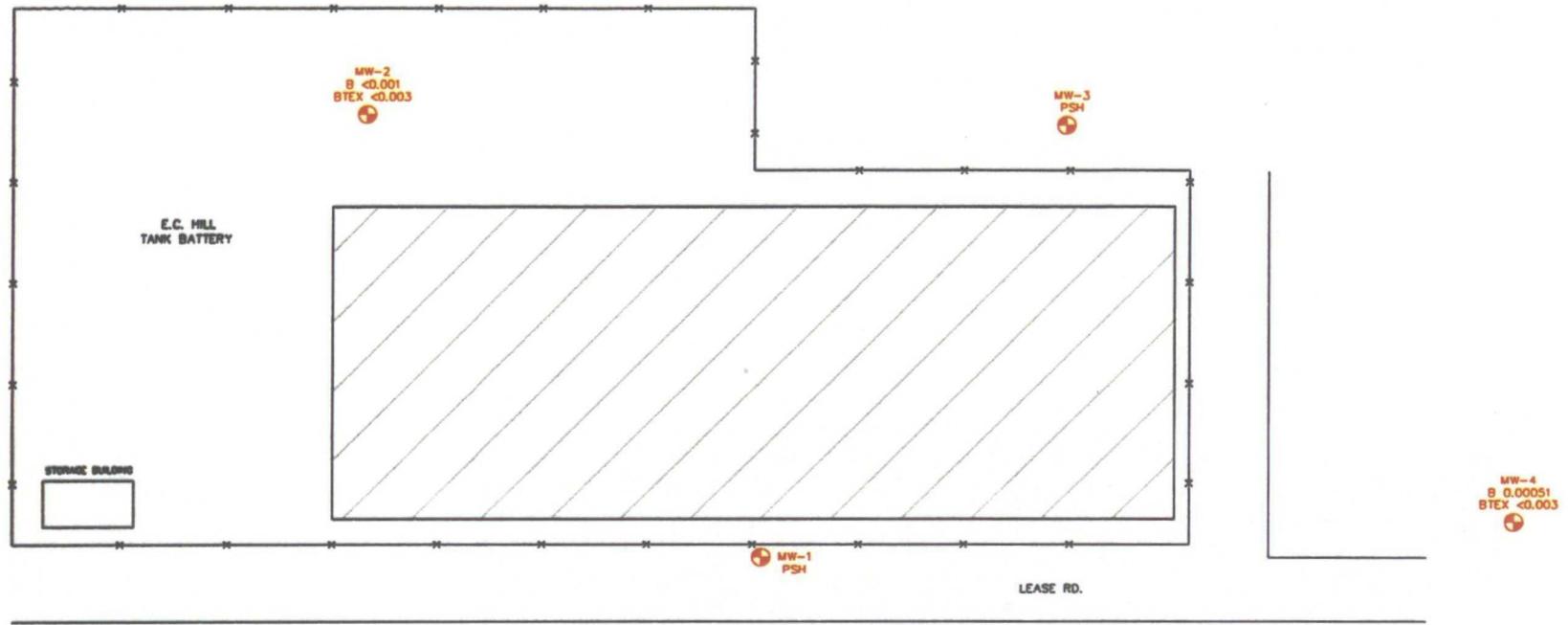
 MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
PSH = PHASE SEPARATED HYDROCARBON  
BTEX CONCENTRATIONS IN mg/L

SCALE: 1" = 60'  

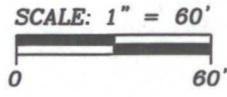

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HILL\_A-B SITE MAP

FIGURE NO. 19

LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
HYDROCARBON CONCENTRATION MAP SAMPLED ON 3/12/09
TETRA TECH, INC. MIDLAND, TEXAS



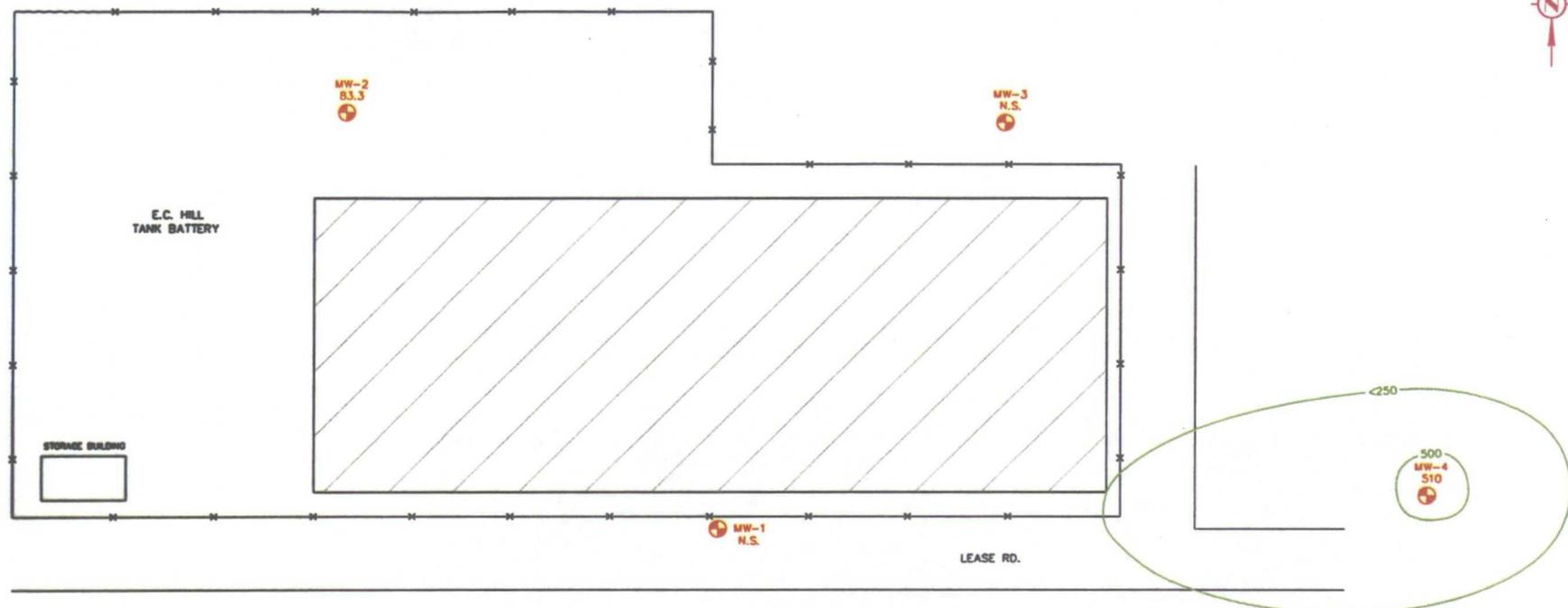
MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
PSH = PHASE SEPARATED HYDROCARBON  
BTEX CONCENTRATIONS IN mg/L



MW-5  
B <0.001  
BTEX <0.003

DATE:  
6/15/09  
DWG. BY:  
JJ  
FILE:  
H:\007\1746\  
HILL\_A-B SITE MAP

<b>FIGURE NO. 20</b>	
LEA COUNTY, NEW MEXICO	
OXY USA, INC. E.C. HILL "A" "B" & "C" TB	
HYDROCARBON CONCENTRATION MAP SAMPLED ON 6/22/09	
TETRA TECH, INC. MIDLAND, TEXAS	

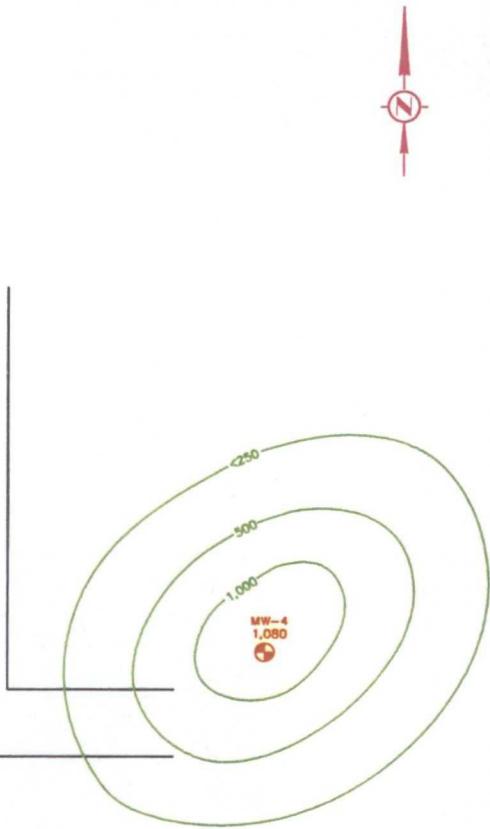
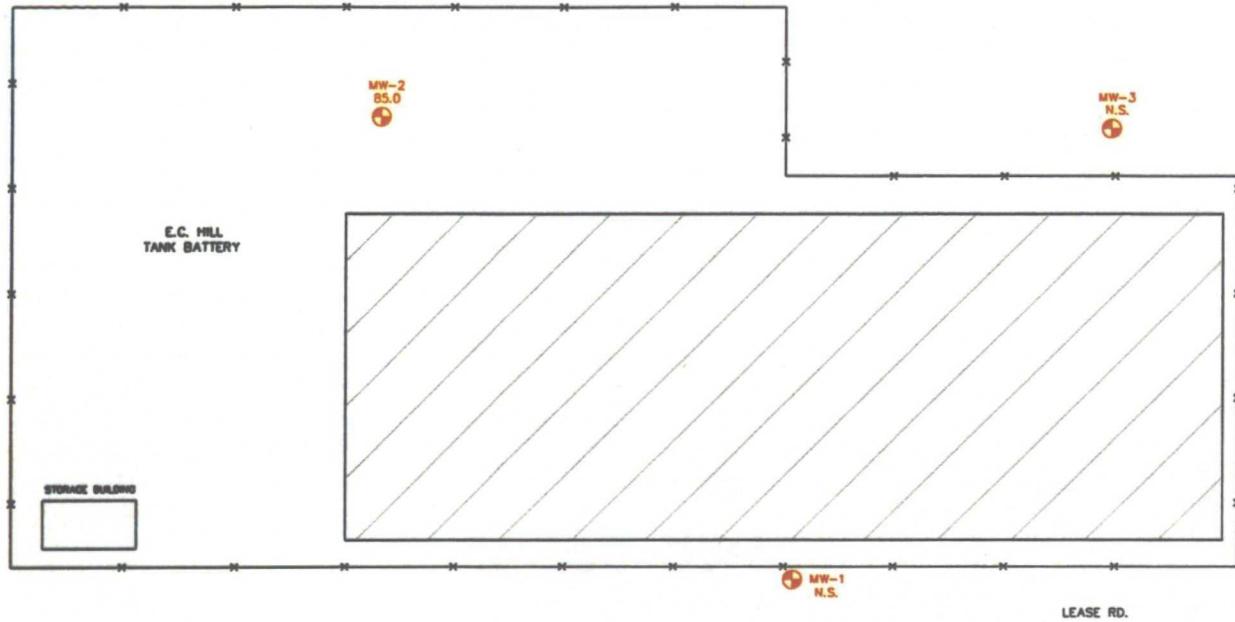


⊕ MONITOR WELL LOCATIONS  
▨ EXCAVATED AREA  
N.S. = NOT SAMPLED  
CHLORIDE CONCENTRATIONS IN mg/L

SCALE: 1" = 60'  
0 60'

DATE:  
3/12/09  
DWG. BY:  
JU  
FILE:  
H:\OXY\1748\  
HLL\_A-B SITE MAP

<b>FIGURE NO. 21</b>
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
CHLORIDE CONCENTRATION MAP SAMPLED ON 3/28/08
TETRA TECH, INC. MIDLAND, TEXAS



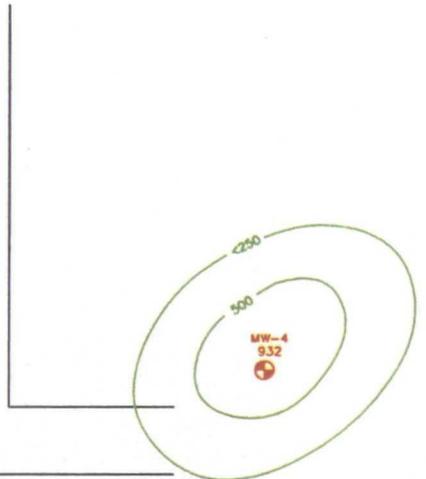
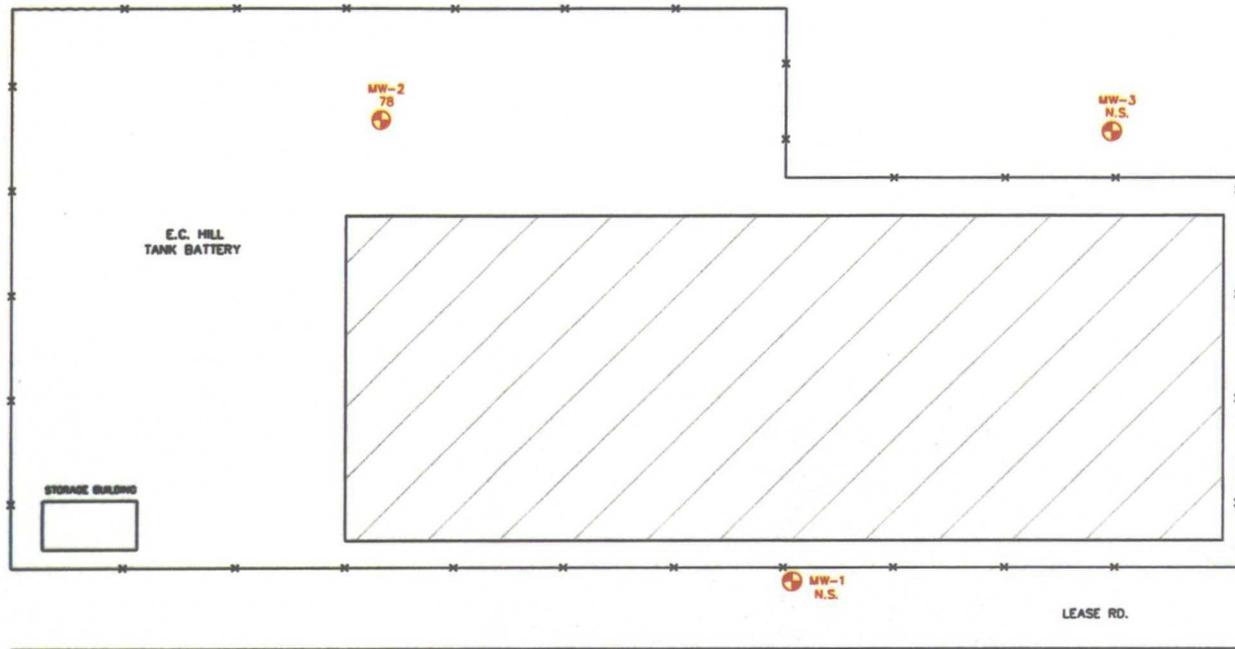
MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
 N.S. = NOT SAMPLED  
 CHLORIDE CONCENTRATIONS IN mg/L

SCALE: 1" = 60'

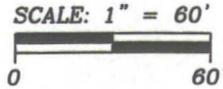
DATE: 3/12/09  
 DWG. BY: JJ  
 FILE: H:\DRY\1746\HILL\_A-B SITE MAP

FIGURE NO. 22
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
CHLORIDE CONCENTRATION MAP SAMPLED ON 6/26/08
TETRA TECH, INC. MIDLAND, TEXAS

MW-5  
132



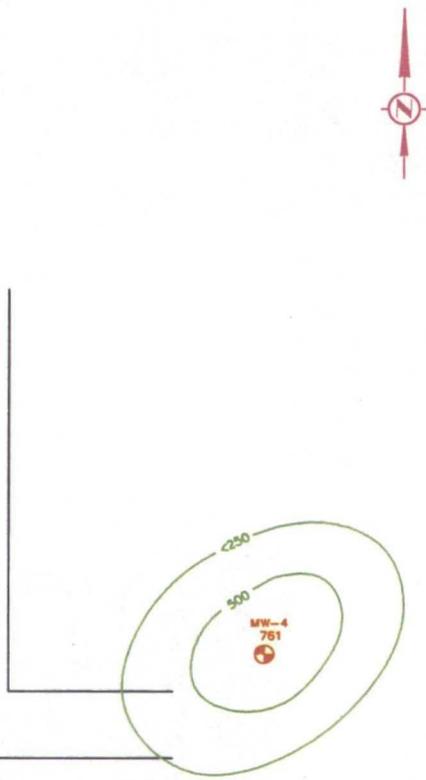
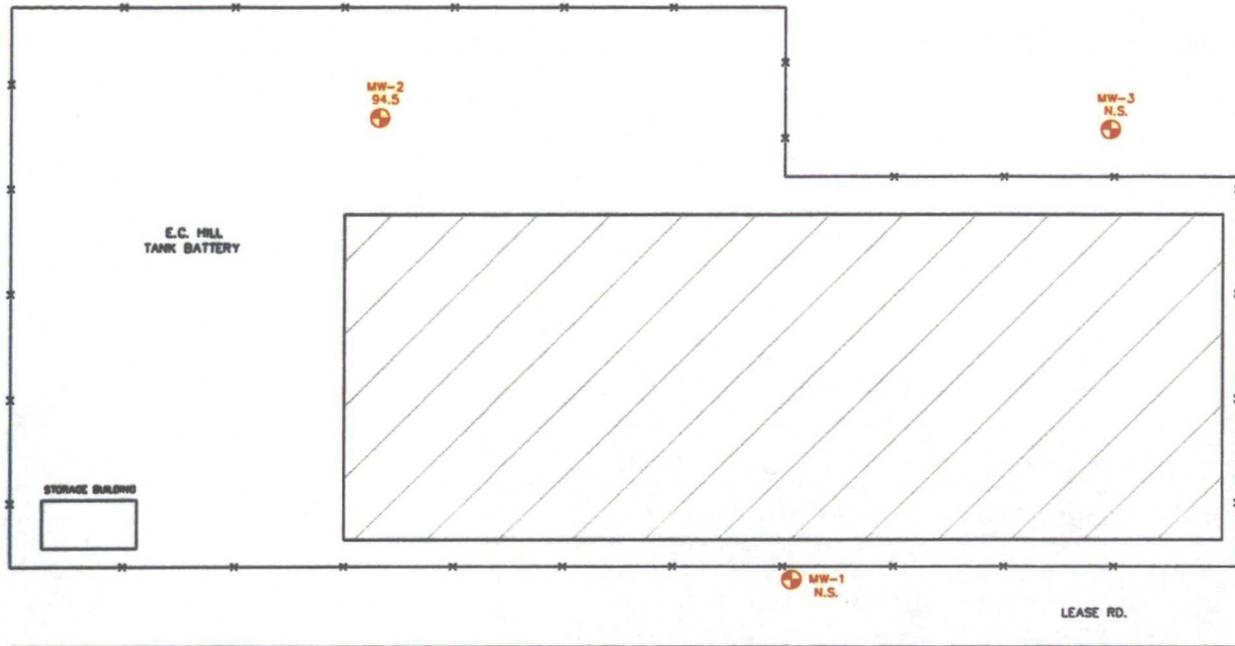
 MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
N.S. = NOT SAMPLED  
CHLORIDE CONCENTRATIONS IN mg/L



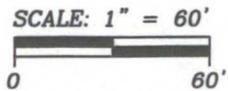
DATE:  
3/12/09  
DWG. BY:  
JJ  
FILE:  
H:\DRY\1746\  
HILL\_A-B SITE MAP

MW-5  
90.9

<b>FIGURE NO. 23</b>	
LEA COUNTY, NEW MEXICO	
OXY USA, INC. E.C. HILL "A" "B" & "C" TB	
CHLORIDE CONCENTRATION MAP SAMPLED ON 9/22/08	
TETRA TECH, INC. MIDLAND, TEXAS	



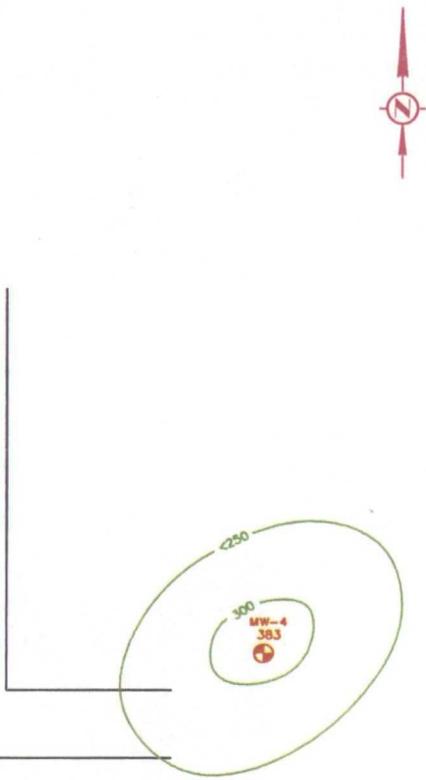
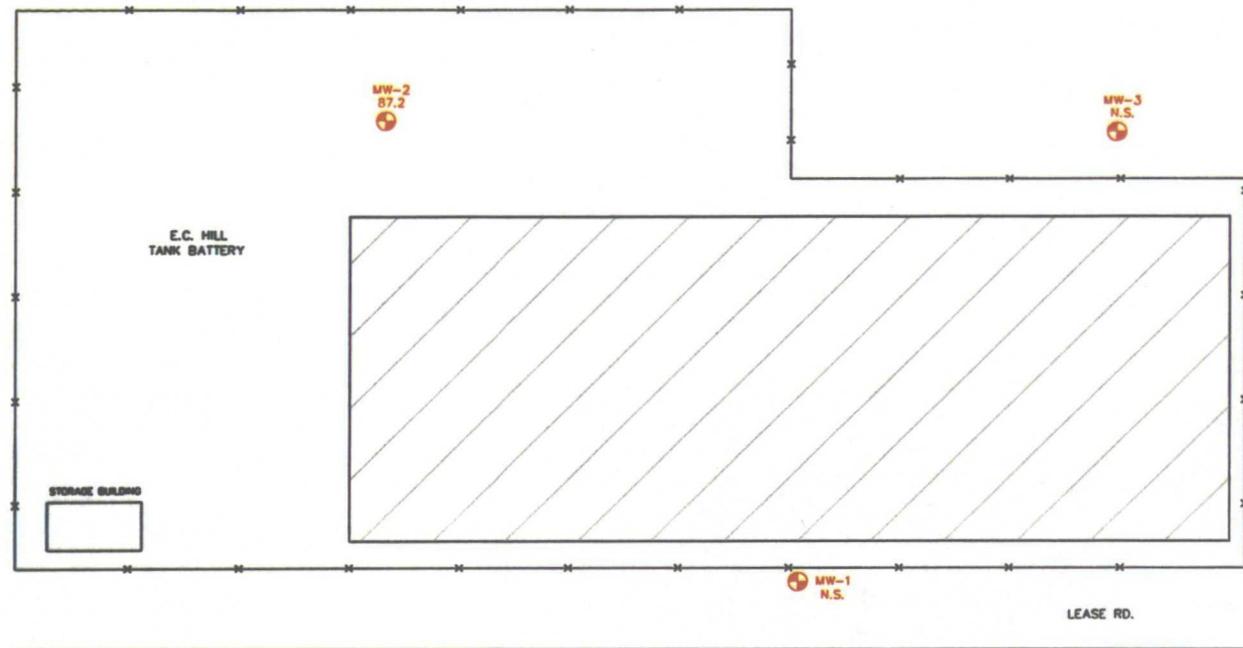
 MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
 N.S. = NOT SAMPLED  
 CHLORIDE CONCENTRATIONS IN mg/L



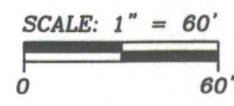
DATE: 3/12/09  
 DWG. BY: JJ  
 FILE: H:\DRY\1746\HILL\_A-B SITE MAP

MW-5  
124

FIGURE NO. 24
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
CHLORIDE CONCENTRATION MAP SAMPLED ON 12/4/08
TETRA TECH, INC. MIDLAND, TEXAS



 MONITOR WELL LOCATIONS  
 EXCAVATED AREA  
 N.S. = NOT SAMPLED  
 CHLORIDE CONCENTRATIONS IN mg/L

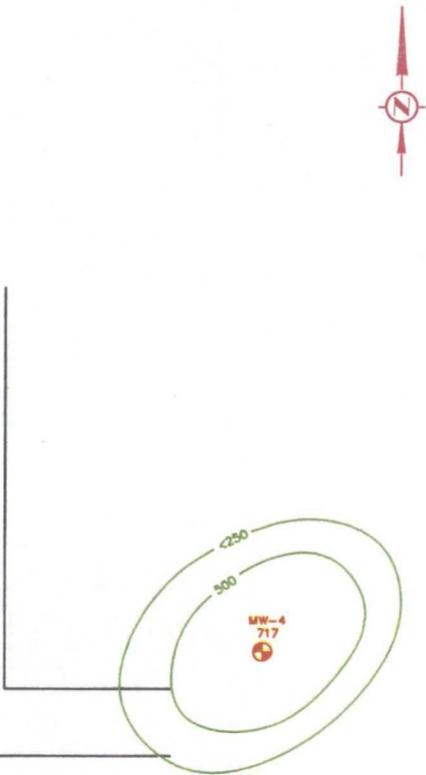
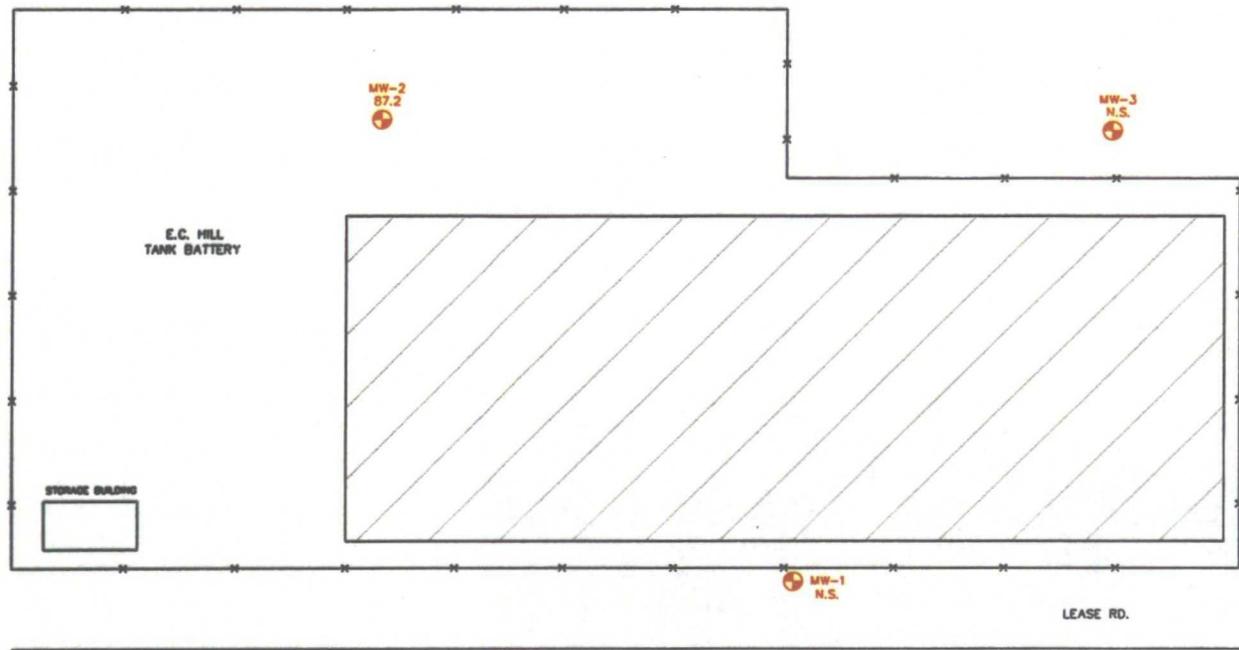


DATE:  
 6/15/09  
 DWG. BY:  
 JJ  
 FILE:  
 H:\DRY\1748\  
 HILL\_A-B SITE MAP

<b>FIGURE NO. 25</b>
LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
CHLORIDE CONCENTRATION MAP SAMPLED ON 3/12/09
TETRA TECH, INC. MIDLAND, TEXAS

MW-5  
90.5





 MONITOR WELL LOCATIONS  
 ENCAVATED AREA  
 N.S. = NOT SAMPLED  
 CHLORIDE CONCENTRATIONS IN mg/L

SCALE: 1" = 60'  


DATE:  
6/15/09  
 DWG. BY:  
JJ  
 FILE:  
H:\OXY\1748\  
HILL\_A-B SITE MAP

MW-5  
92.2

FIGURE NO. 26

LEA COUNTY, NEW MEXICO
OXY USA, INC. E.C. HILL "A" "B" & "C" TB
CHLORIDE CONCENTRATION MAP SAMPLED ON 6/22/09
TETRA TECH, INC. MIDLAND, TEXAS

## TABLES

**Table 1**  
**OXY USA, Inc.**  
**E.C. Hill A, B & C Tank Battery**  
**Summary of Groundwater Elevations and PSH Thickness**  
**Lea County, New Mexico**

Well/ Borehole ID	Date Gauged	Well Total Depth (ft)	Product (ft) (TOC)	Water level (ft) (TOC)	PSH Thickness (ft)	Top of Casing Elevation, feet AMSL	Groundwater Elevation (ft)
MW-1	09/17/04	115	-	88.46	-	3274.52	3186.06
	06/17/05	115	86.01	86.04	0.03	3274.52	3188.48
	11/14/05	115	85.82	85.94	0.12	3274.52	3188.49
	03/22/06	115	85.89	87.14	1.25	3274.52	3188.32
	09/22/06	115	85.63	88.26	2.63	3274.52	3188.23
	03/16/07	115	85.65	88.70	3.05	3274.52	3188.11
	06/06/07	115	85.52	88.51	2.99	3274.52	3188.25
	09/28/07	115	85.60	88.62	3.02	3274.52	3188.17
	12/18/07	115	NM	NM	NM	NM	NM
	03/28/08	115	85.70	88.94	3.24	3274.52	3188.01
	06/26/08	115	85.59	88.66	3.07	3274.52	3188.16
	09/22/08	115	85.78	88.20	2.42	3274.52	3188.14
	12/04/08	115	86.01	88.80	2.79	3274.52	3187.81
	03/12/09	115	85.68	88.60	2.92	3274.52	3188.11
06/22/09	115	85.65	88.63	2.98	3274.52	3188.13	
MW-2	06/17/05	102	-	86.04	-	3274.99	3188.95
	11/14/05	102	-	85.9	-	3274.99	3189.09
	03/22/06	102	-	86.08	-	3274.99	3188.91
	09/22/06	102	NM	NM	NM	3274.99	NM
	03/16/07	102	-	86.23	-	3274.99	3188.76
	06/06/07	102	-	86.10	-	3274.99	3188.89
	09/28/07	102	-	86.22	-	3274.99	3188.77
	12/18/07	102	-	86.20	-	3274.99	3188.79
	03/28/08	102	-	86.26	-	3274.99	3188.73
	06/26/08	102	-	86.16	-	3274.99	3188.83
	09/22/08	102	-	86.23	-	3274.99	3188.76
	12/04/08	102	-	86.60	-	3274.99	3188.39
	03/12/09	102	-	86.25	-	3274.99	3188.74
06/22/09	102	-	86.25	-	3274.99	3188.74	
MW-3	06/17/05	101	-	88.01	-	3276.48	3188.45
	11/14/05	101	-	87.96	-	3276.48	3188.50
	03/22/06	101	-	87.99	-	3276.48	3188.49
	09/22/06	101	-	88.02	-	3276.48	3188.46
	03/16/07	101	-	88.08	-	3276.48	3188.40
	06/06/07	101	-	88.00	-	3276.48	3188.48
	09/28/07	101	-	88.10	-	3276.48	3188.38
	12/18/07	101	-	88.08	-	3276.48	3188.40
	03/28/08	101	87.76	90.27	2.51	3276.48	3188.09
	06/26/08	101	87.60	90.51	2.91	3276.48	3188.15
	09/22/08	101	87.66	90.63	2.97	3276.48	3188.08

**Table 1**  
**OXY USA, Inc.**  
**E.C. Hill A, B & C Tank Battery**  
**Summary of Groundwater Elevations and PSH Thickness**  
**Lea County, New Mexico**

Well/ Borehole ID	Date Gauged	Well Total Depth (ft)	Product (ft) (TOC)	Water level (ft) (TOC)	PSH Thickness (ft)	Top of Casing Elevation, feet AMSL	Groundwater Elevation (ft)
MW-3	12/04/08	101	87.94	90.98	3.04	3276.48	3187.78
	03/12/09	101	87.63	90.67	3.04	3276.48	3188.09
	06/22/09	101	87.60	90.69	3.09	3276.48	3188.11
MW-4	09/22/06	100	-	87.22	-	3275.22	3188.00
	03/16/07	100	-	87.29	-	3275.22	3187.93
	06/06/07	100	-	87.20	-	3275.22	3188.02
	09/28/07	100	-	87.31	-	3275.22	3187.91
	12/18/07	100	-	87.29	-	3275.22	3187.93
	03/28/08	100	-	87.33	-	3275.22	3187.89
	06/26/08	100	-	87.26	-	3275.22	3187.96
	09/22/08	100	-	87.32	-	3275.22	3187.90
	12/04/08	100	-	87.50	-	3275.22	3187.72
	03/12/09	100	-	87.34	-	3275.22	3187.88
06/22/09	100	-	87.32	-	3275.22	3187.90	
MW-5	09/22/06	100	-	87.04	-	3275.04	3188.00
	03/16/07	100	-	87.11	-	3275.04	3187.93
	06/06/07	100	-	87.02	-	3275.04	3188.02
	09/28/07	100	-	87.10	-	3275.04	3187.94
	12/18/07	100	-	87.09	-	3275.04	3187.95
	03/28/08	100	-	87.14	-	3275.04	3187.90
	06/26/08	100	-	87.08	-	3275.04	3187.96
	09/22/08	100	-	87.13	-	3275.04	3187.91
	12/04/08	100	-	87.50	-	3275.04	3187.54
	03/12/09	100	-	87.17	-	3275.04	3187.87
06/22/09	100	-	87.12	-	3275.04	3187.92	

( - ) No data (TOC) Top of casing  
(MW-1) Groundwater elevation corrected using 0.75 specific gravity

**Table 2**  
**OXY USA, Inc.**  
**E.C. Hill A, B & C Tank Battery**  
**Summary of Analysis of Groundwater Samples**  
**Lea County, New Mexico**

Sample ID	Sample Date	PSH Thickness (ft)	Benzene (mg/l)	Toluene (mg/l)	Ethyl-benzene (mg/l)	Xylene (mg/l)	Total BTEX (mg/l)	Chloride (mg/l)
MW-1	09/17/04	-	0.0385	0.0146	0.00694	0.0341	0.09414	195
	10/12/04	-	0.111	0.0197	0.0166	0.0699	0.2172	133
	06/24/05	0.03	-	-	-	-	-	-
	11/14/05	0.12	0.495	0.0809	0.137	0.253	0.9659	178
	03/22/06	1.25	-	-	-	-	-	-
	09/22/06	2.63	-	-	-	-	-	-
	03/16/07	3.05	-	-	-	-	-	-
	06/06/07	2.99	-	-	-	-	-	-
	09/28/07	3.02	-	-	-	-	-	-
	12/18/07	NM	-	-	-	-	-	-
	03/28/08	3.24	-	-	-	-	-	-
	06/26/08	3.07	-	-	-	-	-	-
	09/22/08	2.42	-	-	-	-	-	-
	12/04/08	2.79	-	-	-	-	-	-
	03/12/09	2.92	-	-	-	-	-	-
06/22/09	2.98	-	-	-	-	-	-	
MW-2	06/24/05	-	<0.001	<0.001	<0.001	<0.001	<0.001	102
	11/14/05	-	<0.001	<0.001	<0.001	<0.001	<0.001	61.9
	03/22/06	-	<0.001	<0.001	<0.001	<0.001	<0.001	63.0
	09/22/06	NM	NM	NM	NM	NM	NM	NM
	03/16/07	-	<0.001	<0.001	<0.001	<0.001	<0.001	74.0
	06/06/07	-	<0.001	<0.001	<0.001	<0.001	<0.001	71.8
	09/28/07	-	<0.001	<0.001	<0.001	<0.001	<0.001	47.6
	12/18/07	-	<0.001	<0.001	<0.001	<0.001	<0.001	<200
	03/28/08	-	<0.001	<0.001	<0.001	<0.001	<0.001	83.3
	06/26/08	-	<0.001	<0.001	<0.001	<0.001	<0.001	85.0
	09/22/08	-	<0.001	<0.001	<0.001	<0.001	<0.001	78.0
	12/04/08	-	<0.0005	<0.0005	<0.0005	<0.001	<0.001	94.5
	03/12/09	-	<0.001	<0.001	<0.001	<0.003	<0.003	87.2

Table 2  
 OXY USA, Inc.  
 E.C. Hill A, B & C Tank Battery  
 Summary of Analysis of Groundwater Samples  
 Lea County, New Mexico

Sample ID	Sample Date	PSH Thickness (ft)	Benzene (mg/l)	Toluene (mg/l)	Ethyl-benzene (mg/l)	Xylene (mg/l)	Total BTEX (mg/l)	Chloride (mg/l)
MW-3	06/22/09	-	<0.001	<0.001	<0.001	<0.003	<0.003	89.2
	06/24/05	-	<b>0.00166</b>	<b>0.0026</b>	<b>0.00143</b>	<b>0.0137</b>		420
	11/14/05	-	<b>0.0037</b>	<0.001	<b>0.00132</b>	<b>0.006</b>		310
	03/22/06	-	<b>0.0028</b>	<0.001	<b>0.00397</b>	<b>0.0047</b>		285
	09/22/06	-	<b>0.00232</b>	<0.001	<0.001	<0.001	<b>0.00232</b>	330
	03/16/07	-	<0.001	<0.001	<0.001	<0.001	<0.001	297
	06/06/07	-	<b>0.00114</b>	<0.001	<0.001	<0.001	<b>0.00114</b>	302
	09/28/07	-	<0.001	<0.001	<0.001	<0.001	<0.001	279
	12/18/07	-	<0.001	<0.001	<0.001	<0.001	<0.001	<200
	03/28/08	2.51	-	-	-	-	-	-
	06/26/08	2.91	-	-	-	-	-	-
	09/22/08	2.97	-	-	-	-	-	-
	12/04/08	3.04	-	-	-	-	-	-
	03/12/09	3.04	-	-	-	-	-	-
06/22/09	3.09	-	-	-	-	-	-	
MW-4	09/22/06	-	<0.001	<0.001	<0.001	<0.001	<0.001	606
	03/16/07	-	<0.001	<0.001	<0.001	<0.001	<0.001	462
	06/06/07	-	<0.001	<0.001	<0.001	<0.001	<0.001	480
	09/28/07	-	<0.001	<0.001	<0.001	<0.001	<0.001	638
	12/18/07	-	<0.001	<0.001	<0.001	<0.001	<0.001	238
	03/28/08	-	<0.001	<0.001	<0.001	<0.001	<0.001	510
	06/26/08	-	<0.001	<0.001	<0.001	<0.001	<0.001	1,080
	09/22/08	-	<0.001	<0.001	<0.001	<0.001	<0.001	932
	12/04/08	-	0.00068	<0.0005	<0.0005	<0.001	<0.001	761
	03/12/09	-	<0.001	<0.001	<0.001	<0.003	<0.003	383
06/22/09	-	0.00051	<0.001	<0.001	<0.003	<0.003	717	
MW-5	09/22/06	-	<0.001	<0.001	<0.001	<0.001	<0.001	95.7
	03/16/07	-	<b>0.00375</b>	<0.001	<0.001	<0.001	<b>0.00375</b>	102
	06/06/07	-	<b>0.00277</b>	<0.001	<0.001	<0.001	<b>0.00277</b>	126

**Table 2**  
**OXY USA, Inc.**  
**E.C. Hill A, B & C Tank Battery**  
**Summary of Analysis of Groundwater Samples**  
**Lea County, New Mexico**

Sample ID	Sample Date	PSH Thickness (ft)	Benzene (mg/l)	Toluene (mg/l)	Ethyl-benzene (mg/l)	Xylene (mg/l)	Total BTEX (mg/l)	Chloride (mg/l)
MW-5	09/28/07	-	<b>0.0132</b>	<0.001	<0.001	<0.001	<b>0.0132</b>	31.7
	12/18/07	-	<b>0.0290</b>	<0.001	<0.001	<b>0.0024</b>	<b>0.0314</b>	<200
	03/28/08	-	<b>0.0018</b>	<0.001	<0.001	<0.001	<b>0.0018</b>	85.4
	06/26/08	-	<0.001	<0.001	<0.001	<0.001	<0.001	132
	09/22/08	-	<0.001	<0.001	<0.001	<0.001	<0.001	90.9
	12/04/08	-	<0.0005	<0.0005	<0.0005	<0.001	<0.001	124
	03/12/09	-	<0.001	<0.001	<0.001	<0.003	<0.003	90.5
Dup	03/12/09	-	<0.001	<0.001	<0.001	<0.003	<0.003	82.7
	06/22/09	-	<0.001	<0.001	<0.001	<0.003	<0.003	82.6
Dup	06/22/09	-	<0.001	<0.001	<0.001	<0.003	<0.003	92.2

( - ) Not Analyzed  
 NM - Not measured

**APPENDIX A**  
**LABORATORY ANALYTICAL**



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298  
 208 East Sunset Road, Suite E El Paso, Texas 79922 868•588•3443 915•585•3443 FAX 915•585•4944  
 5602 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313  
 6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260  
 E-Mail: lab@traceanalysis.com

## Analytical and Quality Control Report

Ike Tavarez  
 Highlander Environmental Services  
 1910 N. Big Spring Street  
 Midland, TX, 79705

Report Date: April 4, 2008

Work Order: 8032828



Project Location: Lea County, NM  
 Project Name: OXY/E.C. Hill TB  
 Project Number: 1746

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
155066	MW-2	water	2008-03-28	10:30	2008-03-28
155067	MW-3 (PSH)	soil	2008-03-28	12:00	2008-03-28
155068	MW-4	water	2008-03-28	11:00	2008-03-28
155069	MW-5	water	2008-03-28	11:45	2008-03-28

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 6 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

### Standard Flags

**B** - The sample contains less than ten times the concentration found in the method blank.

## Analytical Report

**Sample: 155066 - MW-2**

Analysis: BTEX	Analytical Method: S 8021B	Prep Method: S 5030B
QC Batch: 47097	Date Analyzed: 2008-04-03	Analyzed By: DC
Prep Batch: 40483	Sample Preparation: 2008-04-02	Prepared By: DC

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.107	mg/L	1	0.100	107	77.8 - 121.1
4-Bromofluorobenzene (4-BFB)		0.0764	mg/L	1	0.100	76	40.1 - 136

**Sample: 155066 - MW-2**

Analysis: Chloride (Titration)	Analytical Method: SM 4500-Cl B	Prep Method: N/A
QC Batch: 46973	Date Analyzed: 2008-03-31	Analyzed By: AR
Prep Batch: 40403	Sample Preparation: 2008-03-31	Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		83.3	mg/L	1	2.00

**Sample: 155068 - MW-4**

Analysis: BTEX	Analytical Method: S 8021B	Prep Method: S 5030B
QC Batch: 47097	Date Analyzed: 2008-04-03	Analyzed By: DC
Prep Batch: 40483	Sample Preparation: 2008-04-02	Prepared By: DC

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.108	mg/L	1	0.100	108	77.8 - 121.1
4-Bromofluorobenzene (4-BFB)		0.0756	mg/L	1	0.100	76	40.1 - 136

**Sample: 155068 - MW-4**

Analysis: Chloride (Titration)	Analytical Method: SM 4500-Cl B	Prep Method: N/A
QC Batch: 46973	Date Analyzed: 2008-03-31	Analyzed By: AR
Prep Batch: 40403	Sample Preparation: 2008-03-31	Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		510	mg/L	10	2.00

**Sample: 155069 - MW-5**

Analysis: BTEX	Analytical Method: S 8021B	Prep Method: S 5030B
QC Batch: 47097	Date Analyzed: 2008-04-03	Analyzed By: DC
Prep Batch: 40483	Sample Preparation: 2008-04-02	Prepared By: DC

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.00180	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.108	mg/L	1	0.100	108	77.8 - 121.1
4-Bromofluorobenzene (4-BFB)		0.0752	mg/L	1	0.100	75	40.1 - 136

**Sample: 155069 - MW-5**

Analysis: Chloride (Titration)	Analytical Method: SM 4500-Cl B	Prep Method: N/A
QC Batch: 46973	Date Analyzed: 2008-03-31	Analyzed By: AR
Prep Batch: 40403	Sample Preparation: 2008-03-31	Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		85.4	mg/L	1	2.00

**Method Blank (1) QC Batch: 46973**

QC Batch: 46973	Date Analyzed: 2008-03-31	Analyzed By: AR
Prep Batch: 40403	QC Preparation: 2008-03-31	Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/L	2

Method Blank (1)      QC Batch: 47097

QC Batch: 47097  
Prep Batch: 40483

Date Analyzed: 2008-04-03  
QC Preparation: 2008-04-02

Analyzed By: DC  
Prepared By: DC

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.000300	mg/L	0.001
Toluene		<0.000200	mg/L	0.001
Ethylbenzene		<0.000500	mg/L	0.001
Xylene		<0.000400	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.107	mg/L	1	0.100	107	77.2 - 129.1
4-Bromofluorobenzene (4-BFB)		0.0746	mg/L	1	0.100	75	69.1 - 122.3

Laboratory Control Spike (LCS-1)

QC Batch: 46973  
Prep Batch: 40403

Date Analyzed: 2008-03-31  
QC Preparation: 2008-03-31

Analyzed By: AR  
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	100	mg/L	1	100	<0.500	100	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	101	mg/L	1	100	<0.500	101	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 47097  
Prep Batch: 40483

Date Analyzed: 2008-04-03  
QC Preparation: 2008-04-02

Analyzed By: DC  
Prepared By: DC

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	0.103	mg/L	1	0.100	<0.00110	103	84 - 119.7
Toluene	0.103	mg/L	1	0.100	<0.00100	103	84.9 - 118.2
Ethylbenzene	0.102	mg/L	1	0.100	<0.00100	102	84.4 - 118.6
Xylene	0.303	mg/L	1	0.300	<0.00290	101	84.8 - 117.8

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	0.102	mg/L	1	0.100	<0.00110	102	84 - 119.7	1	20
Toluene	0.101	mg/L	1	0.100	<0.00100	101	84.9 - 118.2	2	20

continued ...

control spikes continued...

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Ethylbenzene	0.101	mg/L	1	0.100	<0.00100	101	84.4 - 118.6	1	20
Xylene	0.300	mg/L	1	0.300	<0.00290	100	84.8 - 117.8	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.107	0.108	mg/L	1	0.100	107	108	80 - 128.3
4-Bromofluorobenzene (4-BFB)	0.0762	0.0781	mg/L	1	0.100	76	78	67.7 - 126.3

Matrix Spike (MS-1) Spiked Sample: 155069

QC Batch: 46973  
Prep Batch: 40403

Date Analyzed: 2008-03-31  
QC Preparation: 2008-03-31

Analyzed By: AR  
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	176	mg/L	1	100	85.38	91	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	181	mg/L	1	100	85.38	96	70 - 130	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 154975

QC Batch: 47097  
Prep Batch: 40483

Date Analyzed: 2008-04-03  
QC Preparation: 2008-04-02

Analyzed By: DC  
Prepared By: DC

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.09	mg/L	5	0.500	0.5975	98	77.5 - 121.1
Toluene	0.499	mg/L	5	0.500	<0.00500	100	78.8 - 119.6
Ethylbenzene	0.507	mg/L	5	0.500	0.0115	99	77.9 - 120.5
Xylene	1.48	mg/L	5	1.50	<0.0145	98	78.3 - 119.4

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.10	mg/L	5	0.500	0.5975	100	77.5 - 121.1	1	20
Toluene	0.508	mg/L	5	0.500	<0.00500	102	78.8 - 119.6	2	20
Ethylbenzene	0.518	mg/L	5	0.500	0.0115	101	77.9 - 120.5	2	20
Xylene	1.51	mg/L	5	1.50	<0.0145	100	78.3 - 119.4	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued...



8032828

# Analysis Request and Chain of Custody Record

PAGE: / OF: /

## HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.  
Midland, Texas 79705

(432) 682-4559

Fax (432) 682-3946

ANALYSIS REQUEST  
(Circle or Specify Method No.)

CLIENT NAME:

OXY

SITE MANAGER:

IKE TAVAREZ

PROJECT NO.:

1746

PROJECT NAME:

OXY - E.C. Hill TO  
Lea Co. NM

LAB I.D. NUMBER

DATE

TIME

MATRIX

COMP.

GRAB

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE METHOD

HCL

HNOS

ICE

NONE

BTEX 8020/802

MTHS 8030/803

TPH 418.1 8015 MOD. T1005

PAH 8870

ECBA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

PCI

GC/MS Vol. 8240/8260/824

GC/MS Semi Vol. 8370/835

PCB's 8050/808

Peel. 808/808

ROD, TSS, pH, TDS, Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Fingerprint (GC Scan)

155066

3-28-08

10:30

W

X

MW-2

4

X

X

X

X

067

12:00

D

X

MW-3 (PSH)

1

X

X

068

11:00

W

X

MW-4

4

X

X

X

X

069

11:45

W

X

MW-5

4

X

X

X

X

RELINQUISHED BY: (Signature)

Date: 03/28/08

RECEIVED BY: (Signature)

Date: 03/28/08

SAMPLED BY: (Print & Sign)

Date: 3-28-08

RELINQUISHED BY: (Signature)

Date: 1535

RECEIVED BY: (Signature)

Date: 1535

SAMPLE SHIPPED BY: (Circle)

AIRBILL #

RELINQUISHED BY: (Signature)

Date:

RECEIVED BY: (Signature)

Date:

FEDEX BUS AIRBILL #

OTHER:

RECEIVING LABORATORY: Trace

RECEIVED BY: (Signature)

HIGHLANDER CONTACT PERSON:

Results by:

ADDRESS:

CITY: Midland

STATE: TX

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

IKE TAVAREZ

RUSH Charges

Authorized:

Yes No

SAMPLE CONDITION WHEN RECEIVED:

3.5

MATRIX:

W-Water

A-Air

SD-Solid

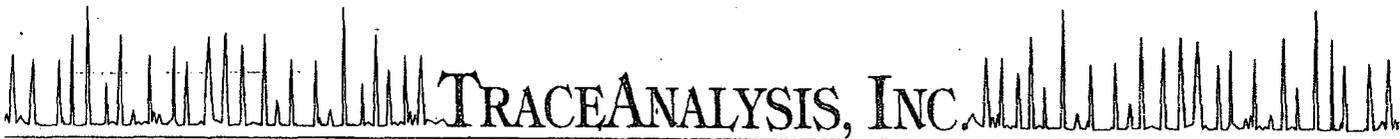
S-Soil

SL-Sludge

Q-Other

REMARKS:

BTEX, chloride - Midland  
Fingerprint - Lubbock



# TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9  
200 East Sunset Road, Suite E  
5002 Basin Street, Suite A1  
8808 Camp Bowie Blvd. West, Suite 180

Lubbock, Texas 79424 800•378•1296  
El Paso, Texas 79922 888•588•3443  
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Ft. Worth, Texas 76116

806•794•1296 FAX 806•794•1298  
915•585•3443 FAX 915•585•4944  
432•689•6301 FAX 432•689•6313  
817•201•5260 FAX 817•560•4336

E-Mail: lab@traceanalysis.com

## ANALYTICAL RESULTS FOR HIGHLANDER ENVIRONMENTAL SERVICES

Attention: Ike Tavarez  
1910 N. Big Spring St.  
Midland, TX 79705

April 02, 2008  
Receiving Date: 03/28/08  
Sample Type: Product  
Project No: 1746  
Project Location: Lea County, NM

Lab Receiving #: 8032828  
Prep Date: 4/01/08  
Analysis Date: 4/01/08  
Sampling Date: 3/28/08  
Sample Condition: Intact & Cool  
Sample Received by: HS  
Project Name: OXY/E.C. Hill TB

TA#: 155067 FIELD CODE: MW-3 (PSH)

### FINGERPRINT

Product sample 155067 (MW-3) was diluted with pentane and analyzed by GC, FID, capillary column and direct injection. The fingerprint (attached) shows the sample to be fresh crude. No significant aging was evident as shown by the significant number and concentration of light end peaks C6 to C20.

CHEMIST: TG

Director, Dr. Blair Leftwich

4-2-08

DATE

Software Version : 6.3.0.0445  
 Reprocess Number : turbogc3\_xp: 129951  
 Operator : turbochrom  
 Sample Number : 052  
 AutoSampler : BUILT-IN  
 Instrument Name : TPH2  
 Instrument Serial # : None  
 Delay Time : 0.00 min  
 Sampling Rate : 25.0000 pts/s  
 Sample Volume : 1.000000 ul  
 Sample Amount : 1.0000  
 Data Acquisition Time : 3/31/2008 11:15:49 PM

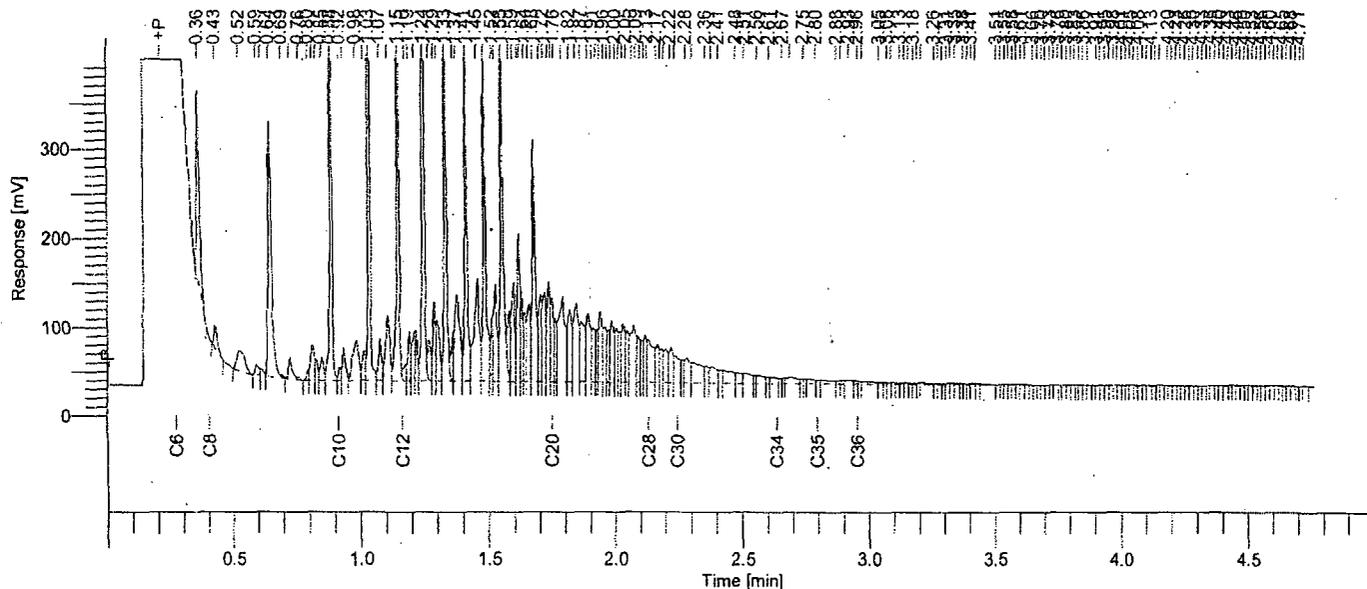
Date : 4/1/2008 10:17:12 AM

Sample Name : 155067  
 Study : 46979  
 Rack/Vial : 0/52  
 Channel : A  
 A/D mV Range : 1000  
 End Time : 4.77 min

Area Reject : 0.000000  
 Dilution Factor : 400.00  
 Cycle : 12

*Sample 155067  
 1:400 dilution*

Raw Data File : D:\Data\Tph2\DMT2A052.raw <Modified>  
 Result File : D:\Data\Tph2\DMT2A052.rst  
 Inst Method : d:\methods\tph2extsur020508 from D:\Data\Tph2\DMT2A052.raw  
 Proc Method : d:\methods\tph2extranges020508.mth from D:\Data\Tph2\DMT2A052.rst  
 Calib Method : d:\methods\tph2extranges020508.mth from D:\Data\Tph2\DMT2A052.rst  
 Report Format File : d:\methods\lims-tx1005ext-soil.rpt  
 Sequence File : D:\Sequence\DMT2A.seq



### TX1005 EXT

Analytical Method: TX1005 EXT  
 Reporting Units: mg/Kg  
 Matrix: soil

Component Name	Adjusted Amount	Raw Amount	Area [ $\mu$ V-s]
Gasoline	374267.331	935.67	2016426.80
Diesel	513073.086	1282.68	4902083.82
Surrogate	33635.314	84.09	321363.82
ORO	54686.527	136.72	508823.01
>C28-C35	54686.527	136.72	508823.01

*Fingerprint  
 RRM  
 04/01/08*

8257520.46

Report stored in ASCII file: D:\Data\Tph2\DMT2A052.TX0

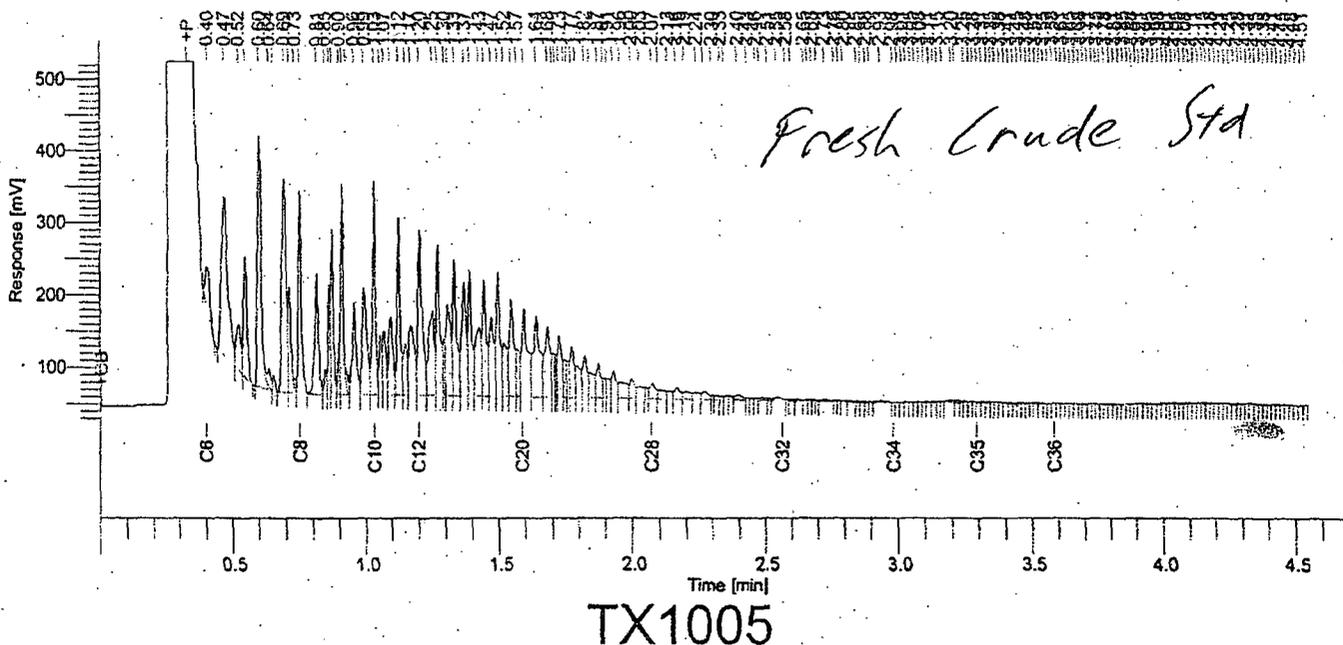
Software Version : 6.1.2.0.1:D19  
 Operator : Turbochrom  
 Sample Number : 019  
 AutoSampler : BUILT-IN  
 Instrument Name : TPH2  
 Instrument Serial # : None  
 Delay Time : 0.00 min  
 Sampling Rate : 25.0000 pts/s  
 Volume Injected : 1.000000 ul  
 Sample Amount : 1.0000  
 Data Acquisition Time : 10/10/01 10:22:15 PM

Date : 10/23/01 9:40:55 AM  
 Sample Name : Fresh Crude Oil ←  
 Study : QC14735  
 Rack/Vial : 0/19  
 Channel : A  
 A/D mV Range : 1000  
 End Time : 4.54 min

Area Reject : 0.000000  
 Dilution Factor : 400.00  
 Cycle : 19

*1:400 dilution*

Raw Data File : D:\Data\TPH2\KWT2A019-20011015-103045.raw <Modified>  
 Result File : D:\Data\TPH2\KWT2A019-20011015-103048.rst  
 Inst Method : D:\Methods\TPH2EXTSUR from D:\Data\TPH2\KWT2A019-20011015-103048.rst  
 Proc Method : D:\Methods\TPH2EXTSUR.mth from D:\Data\TPH2\KWT2A019-20011015-103048.rst  
 Calib Method : D:\Methods\TPH2EXTSUR.mth from D:\Data\TPH2\KWT2A019-20011015-103048.rst  
 Sequence File : D:\Sequence\KWT2A.seq



Analytical Method: TX1005  
 Reporting Units: mg/Kg  
 Matrix: soil

Component Name	Adjusted Amount	Raw Amount	Area [µV s]
TPH AS GASOLINE	475537.0	1188.8	4462405.81
TPH AS DIESEL	367389.7	918.5	2976773.19
C30=	6422.6	16.1	40919.37
			7480098.37

Report stored in ASCII file: D:\Data\TPH2\KWT2A019-20011015-103048.TX0



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298  
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•565•3443 FAX 915•585•4944  
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313  
5015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260  
E-Mail: lab@traceanalysis.com

## NELAP Certifications

Lubbock T104704219-08-TX El Paso T104704221-08-TX Midland T104704392-08-TX

## Analytical and Quality Control Report

Ike Tavaréz  
Highlander Environmental Services  
1910 N. Big Spring Street  
Midland, TX, 79705

Report Date: July 1, 2008

Work Order: 8062729



Project Location: Lea Co, NM  
Project Name: OXY USA/Hill, TB  
Project Number: OXY USA/Hill, TB

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
164967	MW-2	water	2008-06-26	15:10	2008-06-26
164968	MW-4	water	2008-06-26	15:00	2008-06-26
164969	MW-5	water	2008-06-26	14:30	2008-06-26

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 9 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

*Michael Abel*

---

Dr. Blair Leftwich, Director

**Standard Flags**

**B** - The sample contains less than ten times the concentration found in the method blank.

## Case Narrative

Samples for project OXY USA/Hill, TB were received by TraceAnalysis, Inc. on 2008-06-26 and assigned to work order 8062729. Samples for work order 8062729 were received intact without headspace and at a temperature of 3.0 deg. C.

Samples were analyzed for the following tests using their respective methods.

<u>Test</u>	<u>Method</u>
BTEX	S 8021B
Chloride (IC)	E 300.0

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 8062729 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

## Analytical Report

**Sample: 164967 - MW-2**

Laboratory: Midland  
 Analysis: BTEX  
 QC Batch: 49863  
 Prep Batch: 42779

Analytical Method: S 8021B  
 Date Analyzed: 2008-06-28  
 Sample Preparation: 2008-06-28

Prep Method: S 5030B  
 Analyzed By: DC  
 Prepared By: DC

Parameter	Flag	RL		Dilution	RL
		Result	Units		
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0947	mg/L	1	0.100	95	65.1 - 116.8
4-Bromofluorobenzene (4-BFB)		0.0928	mg/L	1	0.100	93	52 - 124.1

**Sample: 164967 - MW-2**

Laboratory: Midland  
 Analysis: Chloride (IC)  
 QC Batch: 49892  
 Prep Batch: 42808

Analytical Method: E 300.0  
 Date Analyzed: 2008-07-01  
 Sample Preparation: 2008-06-30

Prep Method: N/A  
 Analyzed By: AR  
 Prepared By: AR

Parameter	Flag	RL		Dilution	RL
		Result	Units		
Chloride		85.0	mg/L	5	0.500

**Sample: 164968 - MW-4**

Laboratory: Midland  
 Analysis: BTEX  
 QC Batch: 49863  
 Prep Batch: 42779

Analytical Method: S 8021B  
 Date Analyzed: 2008-06-28  
 Sample Preparation: 2008-06-28

Prep Method: S 5030B  
 Analyzed By: DC  
 Prepared By: DC

Parameter	Flag	RL		Dilution	RL
		Result	Units		
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0967	mg/L	1	0.100	97	65.1 - 116.8
4-Bromofluorobenzene (4-BFB)		0.0951	mg/L	1	0.100	95	52 - 124.1

**Sample: 164968 - MW-4**

Laboratory: Midland  
 Analysis: Chloride (IC)      Analytical Method: E 300.0      Prep Method: N/A  
 QC Batch: 49892      Date Analyzed: 2008-07-01      Analyzed By: AR  
 Prep Batch: 42808      Sample Preparation: 2008-06-30      Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1080	mg/L	100	0.500

**Sample: 164969 - MW-5**

Laboratory: Midland  
 Analysis: BTEX      Analytical Method: S 8021B      Prep Method: S 5030B  
 QC Batch: 49863      Date Analyzed: 2008-06-28      Analyzed By: DC  
 Prep Batch: 42779      Sample Preparation: 2008-06-28      Prepared By: DC

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0993	mg/L	1	0.100	99	65.1 - 116.8
4-Bromofluorobenzene (4-BFB)		0.0979	mg/L	1	0.100	98	52 - 124.1

**Sample: 164969 - MW-5**

Laboratory: Midland  
 Analysis: Chloride (IC)      Analytical Method: E 300.0      Prep Method: N/A  
 QC Batch: 49892      Date Analyzed: 2008-07-01      Analyzed By: AR  
 Prep Batch: 42808      Sample Preparation: 2008-06-30      Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		132	mg/L	10	0.500

**Method Blank (1)**      QC Batch: 49863

QC Batch: 49863      Date Analyzed: 2008-06-28      Analyzed By: DC  
 Prep Batch: 42779      QC Preparation: 2008-06-28      Prepared By: DC

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.000200	mg/L	0.001
Toluene		<0.000200	mg/L	0.001
Ethylbenzene		<0.000200	mg/L	0.001
Xylene		<0.000300	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0955	mg/L	1	0.100	96	44.6 - 137.4
4-Bromofluorobenzene (4-BFB)		0.0953	mg/L	1	0.100	95	37.1 - 130.9

**Method Blank (1)**      QC Batch: 49892

QC Batch: 49892      Date Analyzed: 2008-07-01      Analyzed By: AR  
 Prep Batch: 42808      QC Preparation: 2008-06-30      Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.0181	mg/L	0.5

**Laboratory Control Spike (LCS-1)**

QC Batch: 49863      Date Analyzed: 2008-06-28      Analyzed By: DC  
 Prep Batch: 42779      QC Preparation: 2008-06-28      Prepared By: DC

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	0.102	mg/L	1	0.100	<0.000200	102	71.7 - 120.5
Toluene	0.102	mg/L	1	0.100	<0.000200	102	75.4 - 118.8
Ethylbenzene	0.101	mg/L	1	0.100	<0.000200	101	73.5 - 118
Xylene	0.304	mg/L	1	0.300	<0.000300	101	72.9 - 118.2

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	0.104	mg/L	1	0.100	<0.000200	104	71.7 - 120.5	2	20
Toluene	0.104	mg/L	1	0.100	<0.000200	104	75.4 - 118.8	2	20
Ethylbenzene	0.103	mg/L	1	0.100	<0.000200	103	73.5 - 118	2	20
Xylene	0.310	mg/L	1	0.300	<0.000300	103	72.9 - 118.2	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.100	0.101	mg/L	1	0.100	100	101	38.2 - 131.6
4-Bromofluorobenzene (4-BFB)	0.100	0.101	mg/L	1	0.100	100	101	43.9 - 132.4

**Laboratory Control Spike (LCS-1)**

QC Batch: 49892  
 Prep Batch: 42808

Date Analyzed: 2008-07-01  
 QC Preparation: 2008-06-30

Analyzed By: AR  
 Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	12.1	mg/L	1	12.5	<0.0181	97	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	12.1	mg/L	1	12.5	<0.0181	97	90 - 110	0	

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

**Matrix Spike (MS-1) Spiked Sample: 164974**

QC Batch: 49863  
 Prep Batch: 42779

Date Analyzed: 2008-06-28  
 QC Preparation: 2008-06-28

Analyzed By: DC  
 Prepared By: DC

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	0.562	mg/L	5	0.500	0.1119	90	10 - 160.8		
Toluene	0.460	mg/L	5	0.500	<0.00100	92	10 - 160.7		
Ethylbenzene	0.454	mg/L	5	0.500	<0.00100	91	10 - 158.3		
Xylene	1.36	mg/L	5	1.50	<0.00150	91	10 - 158		

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

*continued ...*



standard continued ...

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Ethylbenzene		mg/L	0.100	0.100	100	85 - 115	2008-06-28
Xylene		mg/L	0.300	0.302	101	85 - 115	2008-06-28

**Standard (CCV-1)**

QC Batch: 49863

Date Analyzed: 2008-06-28

Analyzed By: DC

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.102	102	85 - 115	2008-06-28
Toluene		mg/L	0.100	0.102	102	85 - 115	2008-06-28
Ethylbenzene		mg/L	0.100	0.102	102	85 - 115	2008-06-28
Xylene		mg/L	0.300	0.306	102	85 - 115	2008-06-28

**Standard (ICV-1)**

QC Batch: 49892

Date Analyzed: 2008-07-01

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.1	97	90 - 110	2008-07-01

**Standard (CCV-1)**

QC Batch: 49892

Date Analyzed: 2008-07-01

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.1	97	90 - 110	2008-07-01

8062724

WO# 8062729

# Analysis Request of Chain of Custody Record

## HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.  
Midland, Texas 79705

(432) 682-4559

Fax (432) 682-3946

PAGE: OF:

ANALYSIS REQUEST  
(Circle or Specify Method No.)

CLIENT NAME: <i>Dry USA</i>		SITE MANAGER: <i>IK Tavay / Jill Kindley</i>		NUMBER OF CONTAINERS FILTERED (Y/N)	PRESERVATIVE METHOD				<input checked="" type="checkbox"/> EPA 821B <input type="checkbox"/> TPH 8015 MOD. TX1065 (Excl. to CSE) <input type="checkbox"/> PAH 8270 <input type="checkbox"/> RCRA Metals Ag Az Ba Cd Cr Pb Hg Se <input type="checkbox"/> TCLP Metals Ag Az Ba Cd Cr V Pb Hg Se <input type="checkbox"/> TCLP Volatiles <input type="checkbox"/> TCLP Semi Volatiles <input type="checkbox"/> RCI <input type="checkbox"/> GC/MS Vol 8240/8260/824 <input type="checkbox"/> GC/MS Semi. Vol. 8270/825 <input type="checkbox"/> PCB's 8080/608 <input type="checkbox"/> Pest. 808/608 <input checked="" type="checkbox"/> Chlordane <input type="checkbox"/> Gamma Spec. <input type="checkbox"/> Alpha Data (Air) <input type="checkbox"/> PLM (Aquatics) <input type="checkbox"/> Major Anions/Cations, pH, TDS
PROJECT NO.:	PROJECT NAME: <i>Hill, TB, Lea Co, NM</i>				HCL	HNO3	ICE	NONE	
LAB ID. NUMBER	DATE	TIME	MATRIX	COMB	GRAB	SAMPLE IDENTIFICATION			
<i>1049C7</i>	<i>06/26/03</i>	<i>1510</i>	<i>W</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<i>MW-2</i>		<input checked="" type="checkbox"/>	
<i>9108</i>	<i>06/26/03</i>	<i>1500</i>	<i>W</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<i>MW-4</i>		<input checked="" type="checkbox"/>	
<i>9109</i>	<i>06/26/03</i>	<i>1430</i>	<i>W</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<i>MW-5</i>		<input checked="" type="checkbox"/>	

RELINQUISHED BY: (Signature) <i>Sally K...</i>	Date: <i>06/26/03</i>	RECEIVED BY: (Signature) <i>Jill Kindley</i>	Date: <i>06/26/03</i>	SAMPLED BY: (Print & Initial) <i>Jill Kindley</i>	Date: <i>06/26/03</i>
RELINQUISHED BY: (Signature)	Date:	RECEIVED BY: (Signature)	Date:	SAMPLE SHIPPED BY: (Card) <i>IK</i>	AIRBILL #:
RELINQUISHED BY: (Signature)	Date:	RECEIVED BY: (Signature)	Date:	HAND DELIVERED <input type="checkbox"/>	OTHER:
RECEIVING LABORATORY: ADDRESS: CITY: <i>Midland</i> STATE: <i>Tx</i> ZIP: _____	RECEIVED BY: (Signature) <i>Dawn Coufal</i>	DATE: <i>06/26/03</i> TIME: <i>1500</i>	NIGHT/OUR CONTACT PERSON: <i>IK Tavay / Jill Kindley</i>		Results by: RUSH Charges Authorized: Yes <input type="checkbox"/> No <input type="checkbox"/>
SAMPLE CONDITION WHEN RECEIVED: <i>3.0" intact</i>	REMARKS: <i>all test - midland</i>				

Please fill out all copies - Laboratory retains Yellow copy - Return Original copy to Highlander Environmental Corp. - Project Manager retains Pink copy - Accounting receives Gold copy.



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298  
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 6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260  
 E-Mail: lab@traceanalysis.com

### Certifications

**WBENC:** 237019      **HUB:** 1752439743100-86536      **DBE:** VN 20657  
**NCTRCA** WFWB38444Y0909

### NELAP Certifications

**Lubbock:** T104704219-08-TX      **El Paso:** T104704221-08-TX      **Midland:** T104704392-08-TX  
 LELAP-02003      LELAP-02002  
 Kansas E-10317

## Analytical and Quality Control Report

Ike Tavaraz  
 Tetra Tech  
 1910 N. Big Spring Street  
 Midland, TX, 79705

Report Date: September 26, 2008

Work Order: 8092318



Project Location: Lea County, TX  
 Project Name: OXY/E.C. Hill A & B TB  
 Project Number: 115-6401786

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
174395	MW-2	water	2008-09-22	11:15	2008-09-23
174396	MW-4	water	2008-09-22	11:10	2008-09-23
174397	MW-5	water	2008-09-22	11:05	2008-09-23

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 9 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

*Michael Abel*

---

Dr. Blair Leftwich, Director

**Standard Flags**

**B** - The sample contains less than ten times the concentration found in the method blank.

## Case Narrative

Samples for project OXY/E.C. Hill A & B TB were received by TraceAnalysis, Inc. on 2008-09-23 and assigned to work order 8092318. Samples for work order 8092318 were received intact without headspace and at a temperature of 3.4 deg. C.

Samples were analyzed for the following tests using their respective methods.

Test	Method
BTEX	S 8021B
Chloride (IC)	E 300.0

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 8092318 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

## Analytical Report

**Sample: 174395 - MW-2**

Laboratory: Midland  
Analysis: BTEX  
QC Batch: 52712  
Prep Batch: 45164

Analytical Method: S 8021B  
Date Analyzed: 2008-09-24  
Sample Preparation: 2008-09-23

Prep Method: S 5030B  
Analyzed By: DC  
Prepared By: DC

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0874	mg/L	1	0.100	87	65.1 - 116.8
4-Bromofluorobenzene (4-BFB)		0.0890	mg/L	1	0.100	89	52 - 124.1

**Sample: 174395 - MW-2**

Laboratory: Midland  
Analysis: Chloride (IC)  
QC Batch: 52657  
Prep Batch: 45139

Analytical Method: E 300.0  
Date Analyzed: 2008-09-24  
Sample Preparation: 2008-09-24

Prep Method: N/A  
Analyzed By: AR  
Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		78.0	mg/L	10	0.500

**Sample: 174396 - MW-4**

Laboratory: Midland  
Analysis: BTEX  
QC Batch: 52712  
Prep Batch: 45164

Analytical Method: S 8021B  
Date Analyzed: 2008-09-24  
Sample Preparation: 2008-09-23

Prep Method: S 5030B  
Analyzed By: DC  
Prepared By: DC

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0853	mg/L	1	0.100	85	65.1 - 116.8
4-Bromofluorobenzene (4-BFB)		0.0882	mg/L	1	0.100	88	52 - 124.1

**Sample: 174396 - MW-4**

Laboratory: Midland  
 Analysis: Chloride (IC)      Analytical Method: E 300.0      Prep Method: N/A  
 QC Batch: 52657      Date Analyzed: 2008-09-24      Analyzed By: AR  
 Prep Batch: 45139      Sample Preparation: 2008-09-24      Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		932	mg/L	100	0.500

**Sample: 174397 - MW-5**

Laboratory: Midland  
 Analysis: BTEX      Analytical Method: S 8021B      Prep Method: S 5030B  
 QC Batch: 52712      Date Analyzed: 2008-09-24      Analyzed By: DC  
 Prep Batch: 45164      Sample Preparation: 2008-09-23      Prepared By: DC

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0866	mg/L	1	0.100	87	65.1 - 116.8
4-Bromofluorobenzene (4-BFB)		0.0874	mg/L	1	0.100	87	52 - 124.1

**Sample: 174397 - MW-5**

Laboratory: Midland  
 Analysis: Chloride (IC)      Analytical Method: E 300.0      Prep Method: N/A  
 QC Batch: 52657      Date Analyzed: 2008-09-24      Analyzed By: AR  
 Prep Batch: 45139      Sample Preparation: 2008-09-24      Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		90.9	mg/L	10	0.500

**Method Blank (1)**      QC Batch: 52657

QC Batch: 52657      Date Analyzed: 2008-09-24      Analyzed By: AR  
Prep Batch: 45139      QC Preparation: 2008-09-24      Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.172	mg/L	0.5

**Method Blank (1)**      QC Batch: 52712

QC Batch: 52712      Date Analyzed: 2008-09-24      Analyzed By: DC  
Prep Batch: 45164      QC Preparation: 2008-09-23      Prepared By: DC

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.000500	mg/L	0.001
Toluene		<0.000700	mg/L	0.001
Ethylbenzene		<0.000700	mg/L	0.001
Xylene		<0.00180	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0882	mg/L	1	0.100	88	44.6 - 137.4
4-Bromofluorobenzene (4-BFB)		0.0886	mg/L	1	0.100	89	37.1 - 130.9

**Laboratory Control Spike (LCS-1)**

QC Batch: 52657      Date Analyzed: 2008-09-24      Analyzed By: AR  
Prep Batch: 45139      QC Preparation: 2008-09-24      Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	11.8	mg/L	1	12.5	<0.172	94	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	11.4	mg/L	1	12.5	<0.172	91	90 - 110	3	

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

**Laboratory Control Spike (LCS-1)**

QC Batch: 52712  
Prep Batch: 45164

Date Analyzed: 2008-09-24  
QC Preparation: 2008-09-23

Analyzed By: DC  
Prepared By: DC

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	0.102	mg/L	1	0.100	<0.000500	102	71.7 - 120.5
Toluene	0.104	mg/L	1	0.100	<0.000700	104	75.4 - 118.8
Ethylbenzene	0.103	mg/L	1	0.100	<0.000700	103	73.5 - 118
Xylene	0.313	mg/L	1	0.300	<0.00180	104	72.9 - 118.2

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	0.104	mg/L	1	0.100	<0.000500	104	71.7 - 120.5	2	20
Toluene	0.106	mg/L	1	0.100	<0.000700	106	75.4 - 118.8	2	20
Ethylbenzene	0.104	mg/L	1	0.100	<0.000700	104	73.5 - 118	1	20
Xylene	0.317	mg/L	1	0.300	<0.00180	106	72.9 - 118.2	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0912	0.0958	mg/L	1	0.100	91	96	38.2 - 131.6
4-Bromofluorobenzene (4-BFB)	0.0957	0.0998	mg/L	1	0.100	96	100	43.9 - 132.4

**Matrix Spike (MS-1) Spiked Sample: 174436**

QC Batch: 52657  
Prep Batch: 45139

Date Analyzed: 2008-09-24  
QC Preparation: 2008-09-24

Analyzed By: AR  
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	274	mg/L	5	62.5	211	101	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	272	mg/L	5	62.5	211	98	90 - 110	1	

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

**Matrix Spike (MS-1)** Spiked Sample: 174136

QC Batch: 52712  
Prep Batch: 45164

Date Analyzed: 2008-09-24  
QC Preparation: 2008-09-23

Analyzed By: DC  
Prepared By: DC

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	20.8	mg/L	50	5.00	15.4129	108	10 - 160.8
Toluene	12.5	mg/L	50	5.00	7.2486	105	10 - 160.7
Ethylbenzene	5.88	mg/L	50	5.00	0.9752	98	10 - 158.3
Xylene	17.2	mg/L	50	15.0	2.5159	98	10 - 158

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	20.2	mg/L	50	5.00	15.4129	96	10 - 160.8	3	20
Toluene	12.2	mg/L	50	5.00	7.2486	99	10 - 160.7	2	20
Ethylbenzene	5.84	mg/L	50	5.00	0.9752	97	10 - 158.3	1	20
Xylene	17.0	mg/L	50	15.0	2.5159	96	10 - 158	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	4.59	4.44	mg/L	50	5	92	89	33.1 - 132.5
4-Bromofluorobenzene (4-BFB)	4.90	4.68	mg/L	50	5	98	94	37.5 - 136

**Standard (ICV-1)**

QC Batch: 52657

Date Analyzed: 2008-09-24

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.2	90	90 - 110	2008-09-24

**Standard (CCV-1)**

QC Batch: 52657

Date Analyzed: 2008-09-24

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.8	94	90 - 110	2008-09-24

**Standard (ICV-1)**

QC Batch: 52712

Date Analyzed: 2008-09-24

Analyzed By: DC

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.104	104	85 - 115	2008-09-24
Toluene		mg/L	0.100	0.106	106	85 - 115	2008-09-24
Ethylbenzene		mg/L	0.100	0.0998	100	85 - 115	2008-09-24
Xylene		mg/L	0.300	0.306	102	85 - 115	2008-09-24

**Standard (CCV-1)**

QC Batch: 52712

Date Analyzed: 2008-09-24

Analyzed By: DC

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.107	107	85 - 115	2008-09-24
Toluene		mg/L	0.100	0.0900	90	85 - 115	2008-09-24
Ethylbenzene		mg/L	0.100	0.0889	89	85 - 115	2008-09-24
Xylene		mg/L	0.300	0.271	90	85 - 115	2008-09-24

# Analysis Request of Chain of Custody Record

0076



## TETRA TECH

1910 N. Big Spring St.  
Midland, Texas 79705  
(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST OF:  
(Circle or Specify Method No.)

CLIENT NAME: OXY SITE MANAGER: Ike Taylor

PROJECT NO.: 115-6401786 PROJECT NAME: OXY / E.C. Hill A+B TB  
Lea County, TX  
SAMPLE IDENTIFICATION

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS FILTERED (Y/N)	PRESERVATIVE METHOD				OTHER	TPH 8015 MOD. TX1005 (Ext. to CS9)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	PCI	GC.MS Vol. 8240/8280/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 809/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS		
								HCL	HNO3	ICE	NONE																			
174395	9/22/08	11:15	W		X	MW-2	4	X	X			X												X						
396	9/22/08	11:10	W		X	MW-4	4	X	X			X												X						
397	9/22/08	11:05	W		X	MW-5	4	X	X			X												X						

RELINQUISHED BY: (Signature) [Signature] Date: 9-23-08 Time: 14:15  
 RECEIVED BY: (Signature) [Signature] Date: 9-23-08 Time: 14:15  
 SAMPLED BY: (Print & Initial) Ken Taylor / Gerald Curville Date: 9/22/08 Time: 5:15  
 RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 SAMPLE SHIPPED BY: (Circle) FEDEX  BUS  HAND DELIVERED UPS  OTHER: \_\_\_\_\_ AIRBILL #: \_\_\_\_\_  
 RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 TETRA TECH CONTACT PERSON: Russ Taylor Results by: \_\_\_\_\_  
 RECEIVING LABORATORY: 1298 RECEIVED BY: (Signature) \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ CITY: Midland STATE: TX ZIP: \_\_\_\_\_  
 CONTACT: \_\_\_\_\_ PHONE: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
 RUSH Charges Authorized: Yes  No

SAMPLE CONDITION WHEN RECEIVED: 3.40 REMARKS: All tests midland

Please fill out all copies - Laboratory retains Yellow copy - Return Original copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

Please fill out all copies - Laboratory

# ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



## Environmental Division

12-Dec-08

Tim Reed  
Tetra Tech  
1910 N. Big Spring St  
Midland, TX 79705

Tel: (432) 682-4559

Fax:

Re: Glenn Springs Hill E.C. ABC TB

Work Order : 0812131

Dear Tim,

ALS Laboratory Group received 4 samples on 12/5/2008 09:20 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 11.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Electronically approved by: Glenda H. Ramos

Lora Terrill  
VP Lab Operations



Certificate No: T104704231-08-TX

### ALS Group USA, Corp.

Part of the **ALS Laboratory Group**

10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338

Phone: (281) 530-5656 Fax: (281) 530-5887

[www.alsglobal.com](http://www.alsglobal.com) [www.elabi.com](http://www.elabi.com)

A Campbell Brothers Limited Company

**Client:** Tetra Tech  
**Project:** Glenn Springs Hill E.C. ABC TB  
**Work Order:** 0812131

**Work Order Sample Summary**

---

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
0812131-01	MW-2	Water		12/4/2008 11:30	12/5/2008 09:20	<input type="checkbox"/>
0812131-02	MW-4	Water		12/4/2008 10:15	12/5/2008 09:20	<input type="checkbox"/>
0812131-03	MW-5	Water		12/4/2008 11:00	12/5/2008 09:20	<input type="checkbox"/>
0812131-04	Trip Blank	Water		12/4/2008 11:00	12/5/2008 09:20	<input type="checkbox"/>

**ALS Laboratory Group**

Date: 12-Dec-08

Client: Tetra Tech  
 Project: Glenn Springs Hill E.C. ABC TB  
 Sample ID: MW-2  
 Collection Date: 12/4/2008 11:30 AM

Work Order: 0812131  
 Lab ID: 0812131-01  
 Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TCL VOLATILES</b>			Method: SW8260			Analyst: PA	
Benzene	U		0.50	5.0	µg/L	1	12/8/2008
Ethylbenzene	U		0.50	5.0	µg/L	1	12/8/2008
Toluene	U		0.50	5.0	µg/L	1	12/8/2008
Xylenes, Total	U		1.0	15	µg/L	1	12/8/2008
Surr: 1,2-Dichloroethane-d4	98.1			70-125	%REC	1	12/8/2008
Surr: 4-Bromofluorobenzene	101			72-125	%REC	1	12/8/2008
Surr: Dibromofluoromethane	98.8			71-125	%REC	1	12/8/2008
Surr: Toluene-d8	103			75-125	%REC	1	12/8/2008
<b>ANIONS</b>			Method: E300			Analyst: KKP	
Chloride	94.5		2.00	5.00	mg/L	10	12/9/2008
Surr: Selenate (surr)	91.4			85-115	%REC	10	12/9/2008

**Qualifiers:**

- U - Analyzed for but Not Detected
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- \* - Value exceeds Maximum Contaminant Level
- a - Not accredited
- S - Spike Recovery outside accepted recovery limits
- P - Dual Column results RPD > 40%
- E - Value above quantitation range
- H - Analyzed outside of Hold Time
- n - Not offered for accreditation

**ALS Laboratory Group**

Date: 12-Dec-08

**Client:** Tetra Tech  
**Project:** Glenn Springs Hill E.C. ABC TB  
**Sample ID:** MW-4  
**Collection Date:** 12/4/2008 10:15 AM

**Work Order:** 0812131  
**Lab ID:** 0812131-02  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TCL VOLATILES</b>			Method: SW8260			Analyst: PA	
Benzene	0.68	J	0.50	5.0	µg/L	1	12/8/2008
Ethylbenzene	U		0.50	5.0	µg/L	1	12/8/2008
Toluene	U		0.50	5.0	µg/L	1	12/8/2008
Xylenes, Total	U		1.0	15	µg/L	1	12/8/2008
Surr: 1,2-Dichloroethane-d4	99.1			70-125	%REC	1	12/8/2008
Surr: 4-Bromofluorobenzene	97.0			72-125	%REC	1	12/8/2008
Surr: Dibromofluoromethane	101			71-125	%REC	1	12/8/2008
Surr: Toluene-d8	97.1			75-125	%REC	1	12/8/2008
<b>ANIONS</b>			Method: E300			Analyst: KKP	
Chloride	761		20.0	50.0	mg/L	100	12/9/2008
Surr: Selenate (surr)	91.3			85-115	%REC	100	12/9/2008

**Qualifiers:**

U - Analyzed for but Not Detected	S - Spike Recovery outside accepted recovery limits
J - Analyte detected below quantitation limits	P - Dual Column results RPD > 40%
B - Analyte detected in the associated Method Blank	E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level	H - Analyzed outside of Hold Time
a - Not accredited	n - Not offered for accreditation

**ALS Laboratory Group**

Date: 12-Dec-08

Client: Tetra Tech  
 Project: Glenn Springs Hill E.C. ABC TB  
 Sample ID: MW-5  
 Collection Date: 12/4/2008 11:00 AM

Work Order: 0812131  
 Lab ID: 0812131-03  
 Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TCL VOLATILES</b>			Method: SW8260			Analyst: PA	
Benzene	U		0.50	5.0	µg/L	1	12/8/2008
Ethylbenzene	U		0.50	5.0	µg/L	1	12/8/2008
Toluene	U		0.50	5.0	µg/L	1	12/8/2008
Xylenes, Total	U		1.0	15	µg/L	1	12/8/2008
Surr: 1,2-Dichloroethane-d4	102			70-125	%REC	1	12/8/2008
Surr: 4-Bromofluorobenzene	95.9			72-125	%REC	1	12/8/2008
Surr: Dibromofluoromethane	102			71-125	%REC	1	12/8/2008
Surr: Toluene-d8	104			75-125	%REC	1	12/8/2008
<b>ANIONS</b>			Method: E300			Analyst: KKP	
Chloride	124		2.00	5.00	mg/L	10	12/9/2008
Surr: Selenate (surr)	95.4			85-115	%REC	10	12/9/2008

**Qualifiers:**

- U - Analyzed for but Not Detected
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- \* - Value exceeds Maximum Contaminant Level
- a - Not accredited
- S - Spike Recovery outside accepted recovery limits
- P - Dual Column results RPD > 40%
- E - Value above quantitation range
- H - Analyzed outside of Hold Time
- n - Not offered for accreditation

ALS Laboratory Group

Date: 12-Dec-08

Client: Tetra Tech  
 Work Order: 0812131  
 Project: Glenn Springs Hill E.C. ABC TB

QC BATCH REPORT

Batch ID: R70986 Instrument ID VOA1 Method: SW8260

MBLK		Sample ID: VBLKW-120808-R70986			Units: µg/L		Analysis Date: 12/8/2008 11:20 AM			
Client ID:		Run ID: VOA1_081208A			SeqNo: 1555178		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Toluene	U	5.0								
Xylenes, Total	U	15								
Surr: 1,2-Dichloroethane-d4	46.82	5.0	50	0	93.6	70-125	0			
Surr: 4-Bromofluorobenzene	49.69	5.0	50	0	99.4	72-125	0			
Surr: Dibromofluoromethane	48.18	5.0	50	0	96.4	71-125	0			
Surr: Toluene-d8	48.78	5.0	50	0	97.6	75-125	0			

LCS		Sample ID: VLCSW-120808-R70986			Units: µg/L		Analysis Date: 12/8/2008 10:29 AM			
Client ID:		Run ID: VOA1_081208A			SeqNo: 1555177		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	47.9	5.0	50	0	95.8	73-121	0			
Ethylbenzene	46.19	5.0	50	0	92.4	80-120	0			
Toluene	48.32	5.0	50	0	96.6	80-120	0			
Xylenes, Total	144.6	15	150	0	96.4	80-120	0			
Surr: 1,2-Dichloroethane-d4	48.57	5.0	50	0	97.1	70-125	0			
Surr: 4-Bromofluorobenzene	49.13	5.0	50	0	98.3	72-125	0			
Surr: Dibromofluoromethane	50.57	5.0	50	0	101	71-125	0			
Surr: Toluene-d8	50.02	5.0	50	0	100	75-125	0			

MS		Sample ID: 0812124-03AMS			Units: µg/L		Analysis Date: 12/8/2008 03:59 PM			
Client ID:		Run ID: VOA1_081208A			SeqNo: 1555180		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	50.77	5.0	50	0	102	73-121	0			
Ethylbenzene	49.51	5.0	50	0	99	80-120	0			
Toluene	48.98	5.0	50	0	98	80-120	0			
Xylenes, Total	138.7	15	150	0	92.5	80-120	0			
Surr: 1,2-Dichloroethane-d4	50.99	5.0	50	0	102	70-125	0			
Surr: 4-Bromofluorobenzene	50.84	5.0	50	0	102	72-125	0			
Surr: Dibromofluoromethane	51.07	5.0	50	0	102	71-125	0			
Surr: Toluene-d8	52.38	5.0	50	0	105	75-125	0			

ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits  
 O - Referenced analyte value is > 4 times amount spiked  
 S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 P - Dual Column results percent difference > 40%  
 B - Analyte detected in assoc. Method Blank  
 U - Analyzed for but not detected  
 E - Value above quantitation range

Client: Tetra Tech  
 Work Order: 0812131  
 Project: Glenn Springs Hill E.C. ABC TB

# QC BATCH REPORT

Batch ID: R70986 Instrument ID VOA1 Method: SW8260

MSD Sample ID: 0812124-03AMSD Units: µg/L Analysis Date: 12/8/2008 04:25 PM

Client ID: Run ID: VOA1\_081208A SeqNo: 1555181 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	46.59	5.0	50	0	93.2	73-121	50.77	8.59	20	
Ethylbenzene	47.49	5.0	50	0	95	80-120	49.51	4.15	20	
Toluene	48.28	5.0	50	0	96.6	80-120	48.98	1.42	20	
Xylenes, Total	142.5	15	150	0	95	80-120	138.7	2.66	20	
Surr: 1,2-Dichloroethane-d4	48.46	5.0	50	0	96.9	70-125	50.99	5.1	20	
Surr: 4-Bromofluorobenzene	48.33	5.0	50	0	96.7	72-125	50.84	5.06	20	
Surr: Dibromofluoromethane	49.2	5.0	50	0	98.4	71-125	51.07	3.73	20	
Surr: Toluene-d8	50.64	5.0	50	0	101	75-125	52.38	3.37	20	

The following samples were analyzed in this batch:

0812131-01A	0812131-02A	0812131-03A
-------------	-------------	-------------

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

O - Referenced analyte value is > 4 times amount spiked

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

P - Dual Column results percent difference > 40%

B - Analyte detected in assoc. Method Blank

U - Analyzed for but not detected

E - Value above quantitation range

Client: Tetra Tech  
 Work Order: 0812131  
 Project: Glenn Springs Hill E.C. ABC TB

## QC BATCH REPORT

Batch ID: R70992 Instrument ID ICS3000 Method: E300

**MBLK** Sample ID: WBLKW1-120808-R70992 Units: mg/L Analysis Date: 12/9/2008 06:50 AM

Client ID: Run ID: ICS3000\_081208A SeqNo: 1555359 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.50								
Surr: Selenate (surr)	4.709	0.10	5	0	94.2	85-115		0		

**LCS** Sample ID: WLCSW1-120808-R70992 Units: mg/L Analysis Date: 12/8/2008 12:06 PM

Client ID: Run ID: ICS3000\_081208A SeqNo: 1555333 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.92	0.50	20	0	99.6	90-110		0		
Surr: Selenate (surr)	4.826	0.10	5	0	96.5	85-115		0		

**MS** Sample ID: 0812092-01BMS Units: mg/L Analysis Date: 12/8/2008 08:55 PM

Client ID: Run ID: ICS3000\_081208A SeqNo: 1555338 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	56.9	0.50	10	48.65	82.5	80-120		0		EO
Surr: Selenate (surr)	4.428	0.10	5	0	88.6	85-115		0		

**DUP** Sample ID: 0812092-01BDUP Units: mg/L Analysis Date: 12/8/2008 08:32 PM

Client ID: Run ID: ICS3000\_081208A SeqNo: 1555337 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	49.43	0.50	0	0	0	0-0	48.65	1.59	20	
Surr: Selenate (surr)	4.497	0.10	5	0	89.9	85-115	4.439	1.3	20	

The following samples were analyzed in this batch:

0812131-01B	0812131-02B	0812131-03B
-------------	-------------	-------------

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

O - Referenced analyte value is > 4 times amount spiked

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

P - Dual Column results percent difference > 40%

B - Analyte detected in assoc. Method Blank

U - Analyzed for but not detected

E - Value above quantitation range



**ALS Laboratory Group**

10450 Stancliff Rd., Suite 210  
Houston, Texas 77099  
Tel. +1 281 530 5656  
Fax. +1 281 530 5887

**Chain of Custody Form**

Page 1 of 1

**ALS Laboratory Group**

3352 126th Ave.  
Holland, MI 49424-9263  
Tel: +1 616 399 6070  
Fax: +1 616 399 6185

ALS Project Manager:

ALS Work Order #: 881235

Customer Information		Project Information		Parameter/Method Request for Analysis											
Purchase Order		Project Name	<u>Oxy/E.L Hill Tank Battery</u>	A	<u>BTCL</u>										
Work Order		Project Number	<u>1746</u>	B	<u>chloride</u>										
Company Name	<u>Tetra Tech</u>	Bill To Company		C											
Send Report To	<u>Tim Reed</u>	Invoice Attn		D											
Address	<u>1910 N Big Springs</u>	Address		E											
City/State/Zip	<u>Holland TX 75705</u>	City/State/Zip		F											
Phone	<u>432-682-4555</u>	Phone		G											
Fax	<u>432-682-3946</u>	Fax		H											
e-Mail Address	<u>Timothy.Reed@TetraTech.com</u>	e-Mail Address		I											
				J											

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	<u>Mw-2</u>	<u>12-4-08</u>	<u>1130</u>	<u>H2O</u>	<u>1/8</u>	<u>4</u>	<u>X</u>	<u>X</u>									
2	<u>Mw-4</u>	<u>12-4-08</u>	<u>1015</u>	<u>H2O</u>	<u>1/8</u>	<u>4</u>	<u>X</u>	<u>X</u>									
3	<u>Mw-5</u>	<u>12-4-08</u>	<u>1100</u>	<u>H2O</u>	<u>1/8</u>	<u>4</u>	<u>X</u>	<u>X</u>									
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <u>Robert H. ...</u>		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:			
				<input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour							
Relinquished by: <u>Robert H. ...</u>	Date: <u>12/4/08</u>	Time: <u>1435</u>	Received by: <u>[Signature]</u>	Notes:							
Relinquished by: <u>[Signature]</u>	Date: <u>12/5/08</u>	Time: <u>9:20</u>	Received by (Laboratory): <u>[Signature]</u>	Cooler ID	Cooler Temp	QC Package: (Check One Box Below)					
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):			<input type="checkbox"/> Level II Std QC <input type="checkbox"/> TRAP Checklist <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> TRAP Level IV <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other					
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035											

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.  
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.  
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Laboratory Group

Sample Receipt Checklist

Client Name: TETRA TECH MIDLAND

Date/Time Received: 12/5/2008 09:20

Work Order Number 0812131

Received by: ADM

Checklist completed by [Signature]  
Signature

12/5/08  
Date

Reviewed by [Signature] 12/8/08  
Initials Date

Matrix: waters

Carrier name: FedEx

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present
- Custody seals intact on sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Container/Temp Blank temperature in compliance? Yes  No
- Temperature(s)/Thermometer(s): 2.3c 002
- Cooler(s)/Kit(s):
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  N/A

Adjusted?

Checked by

Login Notes: Trip blank not on COC; logged in without analysis.

Client contacted:

Date contacted:

Person contacted

Contacted by:

Regarding:

Comments:

Corrective Action

08612131

This portion can be removed for recipient's records

Date: 12/14/08 FedEx Tracking Number: 867041878170

Sender's Name: Robert Murr Phone: 430 557 6472

Company: Tetra Tech

Address: 1910 W Big Springs

City: Midland State: TX ZIP: 79705

Our Internal Billing Reference:



**ALS Laboratory Group**  
 10460 Stancliff Rd., Suite 210  
 Houston, Texas 77099  
 Tel. +1 281 530 5656  
 Fax. +1 281 530 5887

**CUSTOMER STUDY SEAL**

Date: 12/14/08 Time: 1520

Name: Robert Murr

Company: Tetra Tech

Seal Broken By: KY

Date: 12/15/08



**CONESTOGA-ROVERS  
& ASSOCIATES**

9033 Meridian Way, West Chester, Ohio 45069  
Telephone: (513) 942-4750 Fax: (513) 942-8585  
www.CRAworld.com

---

## MEMORANDUM

---

TO: Tim Reed (Timothy.Reed@TetraTech.com) REF. NO.: 55628 [55628DM-95]  
FROM: Deborah Brennan/bjw/1-NF *DB/bjw* DATE: July 15, 2009  
CC: Angela Bown E-Mail and Hard Copy if Requested  
RE: Analytical Results and QA/QC Review  
Quarterly Groundwater Monitoring Program  
PXP-Hill, E.C. ABC TB Site  
Lea County, New Mexico  
June 2009

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### INTRODUCTION

Groundwater samples were collected in June 2009 in support of the Quarterly Groundwater Monitoring Program at the PXP-Hill, E.C. ABC TB Site. Accutest Laboratories (Accutest) in Houston, Texas and Dayton, New Jersey analyzed the samples for the following:

<i>Parameter</i>	<i>Methodology</i>
Select Volatile Organic Compounds (VOCs) Chloride	SW-846 8260B <sup>1</sup> EPA 300 <sup>2</sup>

A field key is presented in Table 1. The analytical results are summarized in Table 2. The quality assurance/quality control (QA/QC) criteria by which these data have been assessed are outlined in the analytical methods, the "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and the "National Functional Guidelines for Inorganic Data Review," February 1994.

Data assessment was based on information obtained from the Chain of Custody form, finished data sheets, blank data, surrogate recoveries, and blank spike recoveries. A copy of the Chain of Custody is attached.

### QA/QC REVIEW

All samples were prepared and analyzed within the method required holding times.

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- <sup>1</sup> "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and subsequent revisions.
  - <sup>2</sup> "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

Surrogate compounds were added to all samples, blanks, and QC samples prior to VOC analysis. All surrogate recoveries were acceptable, demonstrating good analytical accuracy.

Method blanks were analyzed for all parameters. Target compounds were not detected in the method blanks indicating that contamination was not an issue for this event.

Blank spike (BS) samples were prepared and analyzed for all parameters. The BS analyses demonstrated acceptable analytical accuracy.

One field duplicate sample set was submitted for analysis. The data indicate that an adequate level of precision was achieved for the sampling event.

One trip blank was submitted for analysis. Target compounds were not detected in the trip blank indicating that contamination was not an issue for this event.

#### CONCLUSION

Based on the preceding assessment, the data were acceptable for use without qualifications.

TABLE 1

**SAMPLE COLLECTION AND ANALYSIS SUMMARY  
 QUARTERLY GROUNDWATER MONITORING  
 PXP-HILL, E.C. ABC TB  
 LEA COUNTY, NEW MEXICO  
 JUNE 2009**

<i>Sample I.D.</i>	<i>Collection Date (mm/dd/yy)</i>	<i>Collection Time (hr:min)</i>	<i>Analysis/Parameters</i>		<i>Comments</i>
			<i>VOCs (BTEX)</i>	<i>Chloride</i>	
MW-2	06/22/09	13:05	X	X	
MW-4	06/22/09	13:35	X	X	
MW-5	06/22/09	14:30	X	X	
<i>Dup</i>	06/22/09	-	X	X	Field Duplicate for MW-5
<i>Trip Blank</i>	06/22/09	-	X		

## Notes:

BTEX Benzene, Toluene, Ethylbenzene and Xylene.  
 VOCs Volatile Organic Compounds.

TABLE 2

ANALYTICAL RESULTS SUMMARY  
 QUARTERLY GROUNDWATER MONITORING  
 PXP-HILL, E.C. ABC TB  
 LEA COUNTY, NEW MEXICO  
 JUNE 2009

		<i>Sample Location:</i>	MW-2	MW-4	MW-5	MW-5
		<i>Sample ID:</i>	MW-2	MW-4	MW-5	DUP
		<i>Sample Date:</i>	6/22/2009	6/22/2009	6/22/2009	6/22/2009
						<i>(Duplicate)</i>
<i>Parameters</i>	<i>Units</i>					
<i>Volatile Organic Compounds - BTEX</i>						
Benzene	µg/L		1.0 U	0.51 J	1.0 U	1.0 U
Ethylbenzene	µg/L		1.0 U	1.0 U	1.0 U	1.0 U
Toluene	µg/L		1.0 U	1.0 U	1.0 U	1.0 U
Xylene (total)	µg/L		3.0 U	3.0 U	3.0 U	3.0 U
<i>General Chemistry</i>						
Chloride	mg/L		89.2	717	82.6	92.2

## Notes:

J - Estimated concentration.

U - Not present at or above the associated value.

